N76-23260

NASA TECHNICAL MEMORANDUM

NASA TM X- 72823

(NASA-TM-X-72823) HYPERSONIC RESEARCH ENGINE/AEROTHERMODYNAMIC INTEGRATION MODEL: EXPERIMENTAL RESULTS. VOLUME 3: MACH 7 COMPONENT INTEGRATION AND PERFORMANCE (NASA) 442 p HC $11.75 CSCL 21E G3/07

N76-23260

Unclas 26916

NASA TM X- 72823

HYPERSONIC RESEARCH ENGINE/AEROTHERMODYNAMIC INTEGRATION MODEL - EXPERIMENTAL RESULTS

Volume III - Mach 7 Component Integration and Performance

by

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(Contract No. NAS1-6666)

April 1976

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LANGLEY RESEARCH CENTER, HAMPTON, VIRGINIA 23665

1. Report No. NASA TM X-72823	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle HYPERSONIC RESEARCH ENGINE/AEROTHEMODYNAMIC INTEGRATION MODEL - EXPERIMENTAL RESULTS Volume III - Mach 7 Component Integration and Performance		5. Report Date April 1976
		6. Performing Organization Code 3745
7. Author(s) Earl H. Andrews, Jr.; Ernest A. Mackley; and Engineering Staff, AiResearch Manufacturing Company		8. Performing Organization Report No.
		10. Work Unit No. 505-05-41-03
9. Performing Organization Name and Address NASA Langley Research Center Hampton, VA 23665		11. Contract or Grant No. NAS1-6666
		13. Type of Report and Period Covered Technical Memorandum
12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Washington, D.C. 20546		14. Sponsoring Agency Code

15. Supplementary Notes

Special technical information release, not planned for formal NASA Publication

16. Abstract

The NASA Hypersonic Research Engine (HRE) Project was initiated in 1967 for the purpose of advancing the technology of airbreathing propulsion for hypersonic flight. A large component (inlet, combustor, and nozzle) and structures development program was encompassed by the project. The component development program was culminated in 1974 with the tests of a full-scale (18 in. diameter cowl and 87 in. long) HRE concept, designated the Aerothermodynamic Integration Model (AIM), in the NASA Lewis Research Center, Plum Brook Station Hypersonic Tunnel Facility at Mach numbers of 5, 6, and 7. AIM tests descriptions, data results, and analysis results have been previously documented. Four reports document computer program analysis results of the AIM experimental engine performance. Enough information is included in the four reports to enable additional analysis and/or additional or different interpretation of the AIM data. The present report (Volume III) presents computer program results for the Mach 7 component integration and performance tests. Program results are contained in three additional volumes that have the following subtitles:

Volume I - Mach 6 Component Integration
Volume II - Mach 6 Performance
Volume IV - Mach 5 Component Integration and Performance

17. Key Words (Suggested by Author(s))			18. Distribution Statement
Propulsion Scramjets Engine Performance Hypersonic Propulsion Hydrogen Fuel			Unclassified - Unlimited
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 440	22. Price* $11.25

*For sale by the National Technical Information Service, Springfield, Virginia 22161

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SUMMARY

An extensive aerothermodynamic development program for the purpose of advancing the technology of airbreathing propulsion for hypersonic flight has been conducted by NASA in the form of the Hypersonic Research Engine (HRE) Project. The engine components (inlet, combustor, and nozzle) aerothermodynamic development program culminated in the testing of an engine which integrated these components and allowed assessment of engine performance at Mach numbers of 5, 6, and 7. This engine was termed the Aerothermodynamic Integration Model (AIM) and was a water-cooled, hydrogen-fueled, full-scale configuration of the HRE design concept, 18 inches in diameter at the cowl lip and 87 inches long.

Descriptions of the AIM tests and a computer program used in the engine performance analyses, as well as data results and analyses, have been previously documented. All of the results of the engine performance computer program, including enough information to enable additional analysis or interpretation of the data, are reported in four volumes. Volume I presents Mach 6 component integration results that were obtained with supersonic combustion. During the integration tests, inlet unstart limits were determined for fuel injection from the first stage fuel injectors only and for multi-stage fuel injection. Optimization of the fuel injector combination that would yield the best combustion and engine performance was attempted. Volume II presents Mach 6 engine performance results during supersonic and subsonic combustion modes. Combustion mode transition was successfully performed, exit surveys made, and effects of altitude, angle of attack, and inlet spike position were determined during these tests. Volume III (present report) presents Mach 7 component integration and engine performance results with supersonic combustion modes. Fuel injector optimization was again attempted, exit surveys made, and the effects of low free-stream total temperature, free-stream oxygen content, and angle of attack were studied during these tests. Volume IV presents Mach 5 component integration and engine performance results with supersonic and subsonic

combustion modes. Combustion mode transition was successfully demonstrated, exit surveys made, and effects of free-stream total temperature, free-stream oxygen content, and angle of attack were investigated during these tests.

INTRODUCTION

The NASA Hypersonic Research Engine (HRE) Project was undertaken to design, develop, and construct a hypersonic research ramjet engine for high performance and to flight test the developed concept on the X-15-2A airplane over the speed range from Mach 3 to 8. It should be emphasized that from the beginning the design was specified to be a research ramjet engine to conduct meaningful experiments and was in no sense intended to be a small-scale prototype of a propulsion system for any particular mission.

About one year after the development phase of the HRE program was underway, the X-15 program was phased out; as a result, adjustments to the project plan and scope were necessitated, which were, however, effected without detriment to achievement of the basic project objectives. The result of the adjustment was that ground testing became the major experimental effort for the HRE program. Engine aerothermodynamic components (inlet, combustor, and nozzle) were developed in separate ground-test programs. Results of the development tests are documented in references 1 through 3. Regeneratively cooled engine structures were also included in the ground-testing program. Tests of the hydrogen-cooled engine structure progressed from small panels and problem area components in laboratory setups to wind-tunnel tests at Mach 6.7 of a full-scale, flight-weight engine termed the Structure Assembly Model (SAM). Results of this program, which was completed in May 1971, are reported in reference 4. Culmination of all the HRE development testing was the engine tests of what was termed the Aerothermodynamic Integration Model (AIM). The purpose of the tests of this full-scale, water-cooled, hydrogen-fueled engine was to integrate the aerothermodynamic components and to assess the engine performance at Mach numbers of 5, 6, and 7. Successful tests of the AIM were completed in April 1974.

The AIM employed the HRE design concept of an axisymmetric engine, 18 inches in diameter at the cowl lip and 87 inches long. Versatility was incorporated into the AIM to allow: (1) inlet spike translation for optimum air flow and inlet internal contraction ratio variation; and (2) hydrogen fuel injection for tailored fuel distribution for proper heat release in a diverging combustor, and to change the mode of combustion from supersonic to subsonic or vice versa. The AIM tests are reported in reference 5 and data results of the tests have been analyzed in terms of engine performance by use of a computer program (ref. 6) generated during the HRE program. Results of these analyses are reported in references 7 through 9.

The purpose of the present reports (herein and refs. 10 to 12) is to present experimental engine performance results obtained from computer program analyses of the test data. These results contain the free-stream conditions, pressure distributions, fuel injection configuration and rate, etc., that should enable additional analysis or interpretation of results other than those previously reported. It

should be noted that all units are in U.S. Customary Units because the data results from the HRE contracts, which were initiated in May 1965 with a follow-on effort in February 1967, were under that system. Because of the cost that would have been incurred if the contractors had been required to change to the metric system, the U.S. Customary Units were retained through the HRE contractual effort; this procedure is consistent with the guidelines for conversion established by NASA.

SYMBOLS

All units are in U.S. Customary Units because of the reason noted above.

A	area, ft.^{2}
M	Mach number
P or p	pressure, psia
r	radius, in.
R_{CL}	cowl lip radius at 12^o tangent point (see table 3), in.
x	longitudinal distance from inlet spike virtual tip (see table 3), in.
x_{CL}	longitudinal distance from inlet spike virtual tip to the cowl lip 12^o tangent point (see table 3), in.
Δx	longitudinal distance inlet centerbody moved from inlet physical close-off, in.
$\Delta\Delta x$	difference between an actual x_{CL} value and the Mach 6 x_{CL} value of 34.884 in., in.
T	temperature, ^oR
α	angle of attack, deg.
ϕ	fuel equivalence ratio; value of unity is for stoichiometric combustion (subscript symbols or notations, such as ϕ_{1A} or ER1A, represent the values for the designated fuel injector (e.g., 1A), EROA is the sum of all ϕ-values).

Subscripts:

0	free stream
ref.	reference condition
th	throat
T	total

APPARATUS

Experimental Tests

Experimental tests of the HRE/AIM were conducted in the Plum Brook Hypersonic Tunnel Facility (HTF) (figs. 1(a) and 1(b)) at nominal Mach numbers of 5, 6, and 7. The AIM is shown partially installed in the HTF in the photographs of figures 1(c) and 1(d). During the tests the engine was nearly completely enshrouded except for an 11-inch gap between the facility nozzle exit and the front of the shroud as depicted in the schematic of figure 1(e). This test configuration was suggested by results of a subscale tunnel starting investigation reported in reference 13.

A description of the facility and the results of calibration tests are presented in reference 14. The test facility used an induction-heated, drilled-core graphite storage bed to raise the temperature of nitrogen to a nominal 4960^{o} R at a maximum design pressure of 1200 psia. The nitrogen was mixed with ambient-temperature oxygen to produce synthetic air. Diluent nitrogen was added with the oxygen in the mixture at tunnel Mach numbers below 7 to control free-stream total temperature and to supply the correct weight flow. Because of facility heater deterioration and a lack of time to implement necessary repairs, true temperature simulation of 3700^{o} R at Mach 7 was not achieved; a maximum temperature of about 3100^{o} R was obtained.

The original test plan is summarized in table 1. Because of testing problems and limitations in facility schedule, the test plan was altered to provide a maximum of data to meet the test objectives. Details of the AIM tests are described in reference 5. General test conditions, results, and remarks of the AIM tests were tabulated in references 5 and 9 and are presented herein as table 2. All tests (reading numbers in second column) are listed including the tests that were aborted because of tunnel starting or other problems. Run numbers were assigned to AIM reading numbers or groups of AIM reading numbers with the same test objective (some readings represent zero success, partial success, or are reruns of others) to provide a means for a cross-check with the original plan.

Model

The HRE/AIM was a full-scale (18 inches in diameter at the cowl and 87 inches long), water-cooled, hydrogen-fueled research engine. Details of the design and fabrication of the AIM have been reported in references 16 through 29. The design is described generally in references 5 and 9, and some difficulties encountered with the AIM during the tests are discussed in reference 5.

A schematic of the AIM is presented in figure 2 and the coordinates are listed in table 3. The AIM incorporated a mixed compression inlet with a translating spike that enabled the close-off of the engine (an early HRE program

requirement). The inlet was designed for spike translation to the most open position for Mach 4 to 6 operation with spillage occurring up to Mach 6. At Mach 6 "shock-on-lip" occurred, and from Mach 6 to 8 the spike was designed to translate to maintain shock-on-lip over this Mach number range. An "upsloping throat" was incorporated in the inlet which enabled the inlet to not only maintain shock-on-lip with spike translation for Mach 6 to 8, but also to have increased inlet contraction ratio with increased Mach number. The combustor was designed with diverging walls and the area distribution is shown in figure 3(a) with fuel injector locations indicated. Figure 3(b) presents a sketch of the combustor with the locations of the staged fuel injectors and two sets of ignitors indicated (a third set of ignitors planned for the outerbody at an x-station of 54.38 inches was not installed). The set of ignitors at an x-station of 42.0 inches malfunctioned and use was discontinued (see fig. 3(b)) about midway in the Mach 6 test program (see discussion in ref. 5). Injectors 1A, 1B, 1C, 4, 2A, and 2C were designed to allow optimum distribution of the fuel in the combustor to obtain a fuel equivalence ratio, ϕ, of unity during the supersonic combustion mode. During the supersonic combustion mode, it was desired to inject the maximum amount of fuel from the first-stage injectors (1A and 1B) without unstarting the inlet; all of the fuel was designed to be injected from injectors 1A and 1B at Mach 8. Injectors 3A and 3B were designed for use in the subsonic combustion mode. The locations are tabulated in figure 3(b) for the designed Mach 6 inlet operating position; cowl lip positions other than the Mach 6 position (because of spike translation) result in different x-station values for the injectors and ignitors on the outer wall and also for injector 3B. These changes are accounted for in the performance results presented herein.

Instrumentation

Planned instrumentation for the AIM is documented in reference 15. All of the instrumentation planned was not used because of facility instrumentation recording channel limitations or damages to instrumentation in inaccessible places during the AIM final assembly or during AIM repairs at the test site. A list of all planned instrumentation is presented in table 4 (obtained from ref. 5) with notations indicating the items not installed or damaged, the recording channel numbers for each item used, and the ranges of the pressure transducers or thermocouples.

Method of Calculation

A computer program that incorporated methods described in reference 15 was used in reducing the data from the AIM tests to engineering units. Listings of this program were checked for accuracy and determination of steady-state conditions. Times of interest were selected from each run and the information from the engineering units computer program was used in a performance analysis computer program which incorporated methods described in reference 6. After the erroneous surface pressures were eliminated, the remaining pressures at each station were averaged by the performance computer program which then performed surface-pressure integration by linear interpolation and determined the skin-friction coefficients. Chemical equilibria of the synthetic air and fuel-air mixtures were calculated by the program using methods described in reference 30.

Description of Performance Program Methods

General.- Several methods were used to establish validity of critical parameters, such as the wind tunnel Mach number. The first method used curves generated from instrumentation rakes installed during calibration of the wind tunnel. The second method used measured values of wind tunnel total pressure and temperature, and pitot pressure at the spike tip along with real-gas, normal-shock solution to calculate the wind tunnel Mach number. The third method used measured values of wind tunnel total temperature, spike-tip pitot pressure, and spike cone surface pressure, along with the real-gas, normal-and conical-shock solutions, to calculate the wind tunnel Mach number. Calculations made utilizing each of the three methods indicated good agreement. After confidence was established in the three methods, the use of the third method was discontinued, since it required excessive computer time. Additional information concerning tunnel Mach number determination is contained in reference 9.

The conditions at the inlet throat were determined by computing the momentum and total enthalpy from the pressure forces and accounting for friction and heat losses incurred on the inlet spike and the internal surfaces. The inlet mass flow ratio and additive drag were determined from theoretical calculations (ref. 31). Pressures used in these calculations were obtained as follows: (1) for conditions where inlet start was obtained ($M_{th} > 1$), the calculated mass-momentum-average static pressure was used, and the measured static pressures at the throat were not used; and (2) for conditions where inlet unstart was experienced ($M_{th} \leq 1$), the average of the measured static pressures at the throat was used with the Mach number constrained to unity to calculate spillage and additive drag.

For both cases above, the flow was analytically expanded (isentropically) from the inlet throat conditions to the freestream static pressure in order to determine the hypothetical static enthalpy and associated velocity which are required to compute the inlet kinetic energy efficiency and the inlet process efficiency (as required under the contract statement of work). Also the flow was analytically compressed (isentropically) from the inlet throat conditions until the calculated total enthalpy matched the known total enthalpy after heat loss. For a started inlet, a side calculation was made by isentropically expanding the flow to an area which was arbitrarily set 10 percent larger than the throat area (for flow stability). At this point, the flow was passed through a normal shock. The limiting subsonic pressure recovery for the inlet and the corresponding kinetic energy and process efficiencies were then determined from conditions downstream of the normal shock. These inlet performance parameters were considered of interest as indicators of the overall inlet performance and of flow conditions prior to inlet unstart.

Two methods were used to calculate conditions at the combustor stations: (1) up to the first station where fuel was injected, the mass-momentum-averaged static pressure that satisfied the state, continuity, momentum, and energy equations was calculated; and (2) at stations downstream of the first fuel injector the average of the measured innerbody and outerbody pressures was used, and the combustor efficiency was calculated to satisfy the conservation equations. For these methods it was assumed that the flow area equals the geometric duct

area (no flow separation). The amount of hydrogen required to react in order to satisfy the measured static pressure, the duct area, the heat loss, and the conservation equations is computed by the program. Of the total hydrogen injected or present in the flow at a given station, the amount which reacts has been named "real" hydrogen and is used in the equilibrium chemistry process being completed. The hydrogen which is not reacting has been named "inert" hydrogen. The concept of real and inert hydrogen and the station-wise conversion from inert to real is simply a bookkeeping procedure in the program which simulates or "models" the mixing process. The inert hydrogen is assumed to have the properties of an inert gas, not to react with other species, and not to dissociate.

The combustor throat was defined as the point of minimum-flow area between the struts in the subsonic combustion mode and at the strut exit plane in the supersonic combustion mode. When the computed one-dimensional Mach number at the assumed combustor exit was found to be less than 0.95, the computation was considered to improperly represent the subsonic combustor flow situation in that the flow must have reached a sonic point further downstream. With the area increasing added combustion (heat release) downstream of the assumed combustor exit station is implied. Therefore, a side calculation was made of the combustor efficiency required to produce sonic velocity at the assumed combustor exit station, as if this added heat release occurred prior to the assumed combustor exit station. For this condition, the performance program printout shows results under the heading SONIC THROAT (e.g., reading 94, time 150.342 sec).

The regeneratively cooled combustor performance ("COMBUSTOR REGEN" in the performance program printout) was simulated by recalculating the total enthalpy at the combustor exit as the sum of the free-stream enthalpy of the synthetic air, the enthalpy of the hydrogen fuel at $50^{o}R$, and the absolute value of the heat loss through all the engine surfaces wetted by the internal flow stream. Using this total enthalpy, the stream total pressure, and the same combustion efficiency, the combustor exit static-state properties were also computed.

Nozzle performance was obtained by isentropically expanding the flow from the actual and regeneratively cooled combustor exits to the nozzle exit area and to ambient pressure ("NOZZLE AE" and "NOZZLE PO" in the performance program printout). The flow was then isentropically expanded from the actual combustor throat to those nozzle stations representing the locations of pressure taps, and the local skin-friction coefficients were calculated using the Spalding-Chi correlation. The nozzle vacuum stream thrust coefficient was also computed. This coefficient is arbitrarily defined in previous HRE documents (e.g., refs. 3 and 15) as the ratio of the actual nozzle exit total momentum (stream thrust) divided by the theoretical nozzle exit total momentum where the flow was isentropically expanded from the combustor exit conditions to the nozzle exit area (512.389 in^2). The actual nozzle exit total momentum was determined by taking the combustor exit total momentum and adding (or subtracting) the pressure force, the friction force, and one-half of the calculated drag force (one-half of strut assumed to be charged to the nozzle component). The hypothetical static enthalpy resulting from the computed isentropic expansion from the combustor exit conditions to the free-stream static pressure was used to calculate the nozzle kinetic energy and process efficiencies.

Side calculations were made of a fictitious stagnation combustion process (constant pressure and zero velocity) with 100 percent combustion efficiency and no loss to the walls (denoted in the performance program printout as "FICTIVE COMBUSTOR"), followed by an isentropic expansion to ambient pressure to obtain the combustor effectiveness. Also to obtain the combustor effectiveness, the flow at the combustor exit was expanded to free-stream static pressure and the total momentum at this pressure was determined. The combustor effectiveness (ref. 15) is then the change in total momentum for the actual combustor process from the combustor entrance condition to the expanded (free-stream static pressure) condition divided by the change in total momentum for the fictitious process mentioned above from the combustor entrance condition to the expanded (free-stream static pressure) condition. Side calculations were also made of a fictitious nozzle to determine the static and total conditions ("FICTIVE NOZZLE" in the performance program printout) required to match the actual vacuum specific impulse at the nozzle exit.

Calculation of cooling load distribution.- For the AIM tests, the heat loss distribution was determined from the differences between the skin thermocouples inbedded in the engine surfaces and the cooling water temperatures. Standard heat-transfer equations were used to obtain local heat losses. These losses were then adjusted linearly with the overall heat loss as measured by the overall water temperature rise. The detailed equations and procedures used for these computations are presented in reference 9.

Tare forces.- Purge nitrogen was injected in the AIM cavity between the non-metric "windshield" shroud and the metric outerbody to assure that hot tunnel gases did not enter into this cavity. This method produced a large tare force which was of the same order of magnitude as the engine net thrust. An effort was made to reduce and even control the tare force by suitable control of the pressures in two parts of the cavity. This tare-force control concept was, however, not achieved. Since the thrust is considered the most important measurement in evaluating the engine performance, special tare-force calibration tests were made and the results carefully correlated in order to determine the correction for the measured thrust. The method and procedures are described in detail in references 5 and 9.

External drag.- The external drag was calculated from the summation of pressure and friction forces acting on the external metric surfaces of the AIM. The method and procedures are described in reference 9.

Strut force calculation.- The performance program was originally programmed to calculate strut force based on a theoretical calculation, assuming uniform flow ahead of the strut. This force should be a drag term since, theoretically, pressures downstream of the maximum strut blockage should be lower than upstream. However, test data indicate that this is only true with subsonic combustion. Upon examination of the test data, it appeared that measured static pressures between struts on both the inner and outer walls (there were no measurements along the strut surfaces) could be used to represent the forces occurring on the strut surface. Thus, a pressure integral was used to determine the strut force and a calculation was also made for strut base pressure as discussed in reference 9.

Performance correction for regeneratively cooled system.- The AIM incorporated a water-cooled jacket in which heat was rejected and not recovered. In order to compensate for this heat loss, hydrogen fuel was heated up to 1500° R to simulate a regeneratively cooled system. The deficiency of energy in the system in terms of theoretical energy release was less than 10 percent in all cases.

In order to correct this deficiency, the performance computer program (ref. 6) incorporated a side calculation in which the energy deficiency, because of the heat loss through internal surfaces, was added to the stream at the combustor exit with no total pressure change. The flow was then expanded to the nozzle exit with measured nozzle efficiency. The differences between the heat added to fuel and the internal cooling loss are presented for several tests in reference 9 as table 6.6-1.

Performance correction for inlet total temperature.- Because of the facility heater deterioration, the true temperature simulation of 3700° R at Mach 7 was not achieved (the test Mach number was generally about 7.25 requiring a simulation temperature of about 3960° R). It is known that the effect of decreasing total temperature is to increase the engine performance. Therefore, it is necessary to correct the measured performance for Mach 7 (results contained herein) to properly account for deviations in test conditions. Theoretical calculations indicate that, at Mach 7, a decrease of 560° R would increase the thrust coefficient by 5 percent and the specific impulse by 3.5 percent. The accomplishment of this correction in the performance computer program (ref. 6) employed the methods discussed in reference 9.

Determination of tunnel gas composition.- The oxygen-to-nitrogen ratio was determined from the flow measurements of oxygen, diluent nitrogen, and nitrogen entering the storage heater, and checked by gas samples taken through two aspirating thermocouple probes 180° apart in the facility nozzle entrance prior to each run. The samples were collected in high-pressure bottles and later analyzed on a mass-spectrometer. The measured compositions for each run are presented in reference 9 as table 6.8-1. The one-dimensional performance computer program (ref. 6) used only the N_2 and O_2 values.

RESULTS

Selected points of interest of the HRE/AIM test data have been analyzed by use of the one-dimensional performance analysis computer program (ref. 6). The amount of material generated requires four volumes. Mach 7 component integration and engine performance results are presented herein. Mach 6 component integration results, Mach 6 engine performance results, and Mach 5 component integration and engine performance results are presented in references 10 to 12, respectively. All of these results were used in references 7 through 9 in the discussion of the results of the AIM test program.

Selected Test Points for Performance Analysis

Details of the AIM tests were discussed in reference 5 which included a list of all the HRE/AIM tests; this list is contained herein as table 1 (included in each volume). The individual AIM tests were recorded as consecutive reading numbers that extended through number 97 for a total operation time of 112 minutes with 41.5 minutes of combustor operations. About 60 successful tests are noted in the first column of table 2.

Reference 5 documented the fuel injection schedules, both planned and measured, for the successful tests. The measured fuel injection schedules for the successful Mach 7 tests are contained herein for convenience in figure 4. Such plots were reviewed and points (run time) of interest were selected for performance analysis. The selected points were listed in reference 9 and are included in tables 5(a) through 5(d) for the results presented in references 10 and 11, herein, and reference 12, respectively, where the times correspond to the abscissa in figure 4. The first column of table 5 indicates the page number of the initial page of the data for a given test point (specific time of a reading number). Table 5 indicates the general test conditions and fuel injection equivalence ratios, ϕ, for the first-, second-, and third stage injectors and the accumulative ϕ-value. Also, the use of ignitors is indicated and the general purpose of the test is noted.

Vagaries in the test program that should be noted (table 5, last column) are:

(1) Fuel equivalence ratio values, ϕ, in table 5 for reading 93 are lower than the values indicated by the fuel injection schedule (fig. 4(a) of ref. 12). In preparation for the performance analysis, the tunnel measured oxygen content was found to be about 34 percent instead of the standard 21 percent; therefore, the fuel equivalence ratios were corrected to account for the difference in the available oxygen for combustion.

(2) Time 235 seconds in reading 90 is for an inlet unstart condition. With an unstart, the captured mass flow is, of course, greatly decreased, and since the fuel flow rate is still high, the ϕ-value would be high as indicated, therefore this time is not very meaningful.

(3) At Mach 7 the agreement between computed thrust (a function of $\int pda$) and measured thrust was not nearly as favorable as experienced for Mach 6. Examination of the surface static pressure distributions on the outer combustor surface in the vicinity of the pressure rise indicated some pressure instrumentation to be faulty. For reading 89, more reasonable values were substituted for the measured pressures and the performance recomputed. The recomputation was performed for two different times, 316.47 and 327.27 seconds (see table 5(c)), and the results indicate a much more favorable agreement between the computed and measured thrust. The channel numbers in which new pressure values were substituted are noted on the first page of the results for these two times. A more detailed discussion of this exercise is contained in reference 9 (section 7.7.2 Mach 7 Performance).

(4) Times 264.04, 274.84, and 275.74 seconds of reading 96 had a fuel flow measurement malfunction that indicated no fuel flow from injector 1B. Injector 1B manifold pressure, however, indicated flow to exist at pressure levels about equal to planned pressure levels (ϕ-values about the same as for injector 1A). The performance calculations for these times of reading 96 erroneously used only fuel flow from injector 1A.

(5) At time 313.54 seconds, also of reading 96, the test chamber pressure was noted to be high, thus yielding unrealistically high pressures on the AIM nozzle shroud and plug that would, of course, contribute erroneously to increased engine thrust.

Description of Performance Computer Results

The selected points listed in table 5 were analyzed using the performance computer program described in reference 6. As noted in the Method of Computation section, the AIM test data were reduced to engineering units and reviewed for erroneous data. Such data were "coded out" in the performance computer program. Table 6 indicates the channels that were coded out. The COXX indicates the code outs for a reading number, e.g., for reading 33, CO33 is indicated. Channels that are coded out are listed adjacent to the notation KODSEL, e.g., for reading 33 the first and last of 85 coded out channels are 60 and 399, respectively. The locations and type of measurement for the listed channels may be determined by referring to table 4.

Several points (run time) of interest were selected for each run as indicated in table 5. The page numbers indicated in the first column of table 5 are output listings of the performance computer program (ref. 6). For each time of interest there are seven or eight pages of computer output listings. On each of these pages a standard heading exists: READING number (test number); BLOCK number (numbered sequentially and corresponding to recording times of test data); TIME (of data recording, seconds); MACH number (in wind tunnel); PT (total pressure in wind tunnel, psia); TT (total temperature in wind tunnel, ^{o}R); and PAGE number.

Station flow parameters.- A summary of flow parameters at each calculation station in the AIM is contained on pages 1, 2, and 3. Each station is headed by a station designator (i.e., WIND TUNNEL, INLET THROAT, COMBUSTOR, etc.), followed by three integers (the zero following the combustor designator is meaningless). The first integer denotes the station number, the second denotes the combustor station, and the third denotes the number of interations required to converge on a solution. The third integer may assume values between 0-21, 100-121, and 200-221. A value of the third integer equal to 21 denotes that the mass flow was too great or the flow area too small to obtain a solution, 121 denotes that the solution for total conditions did not converge in 21 interations and 200-221 denotes that the mass flow was too small or the flow area too large to obtain a solution. When both solutions for static and total conditions have converged, the third integer may assume the values 1-20 or 101-120 depending upon which solution (static or total) required the larger number of interations. Columns 2-8 have two rows of values for each station; total and static conditions in first and second rows, respectively.

Most of the station designators are self-explanatory. The first appearance of the designators WIND TUNNEL and SPIKE TIP NS (NS = NORMAL SHOCK) reports conditions in wind tunnel and upstream of the spike tip based on a wind tunnel Mach number determined from calibration runs. The second appearance of these designators reports these conditions based on a wind-tunnel Mach number calculated from the total and pitot pressures and the total temperature of the synthetic air applied to the normal shock equations. The designators INLET UPNRSK and INLET DNNRSK denote conditions upstream and downstream of a normal shock positioned at a fictitious flow area 1.10 times the flow area at the inlet throat. The designator COMBUSTOR REGEN denotes, for cases with fuel flow, conditions at the combustor throat simulating a regeneratively cooled ramjet. In some cases (e.g., reading 94 time 150.342 sec) the designator SONIC THROAT appears ahead of the COMBUSTOR REGEN. This denotes the results discussed in section entitled "Description of Performance Program Methods." NOZZLE AE and NOZZLE PO report conditions when the flow is expanded isentropically to the nozzle exit area and to the wind-tunnel static pressure, respectively. NOZZLE AE REGEN and NOZZLE PO REGEN denote, for cases with fuel flow, conditions at the nozzle exit simulating a regeneratively cooled ramjet. FICTIVE COMBUSTOR denotes stagnation combustion conditions (zero velocity and constant pressure) with combustor efficiency equal to unity. FICTIVE NOZZLE reports conditions required to match the actual momentum and nozzle exit area.

Definition and units of parameters in the SUMMARY REPORT, pages 1-3 in the computer listings, are listed below:

P - pressure, psia
T - temperature, ^{o}R
H - enthalpy*, Btu/lb_m
GAMMA - specific heat ratio
MOLWT - molecular weight
SONV - conic velocity, ft/sec
MACH - Mach number
VEL - flow velocity, ft/sec
S - entropy, Btu/lb_m-^{o}R
W/A - flow rate per unit area, lb_m/sq in
W - flow rate, lb_m/sec
A/AC - mass flow ratio
MØMTM - flow momentum, lb_f
Q - dynamic pressure, lb_f/sq in
IVAC - vacuum specific impulse, lb_f-sec/lb_m
PHI - equivalence ratio (see discussion in Ramjet Performance section)
ETAC - combustor efficiency

*Two values were reported. The first value (column 4) was the JANNAF-based enthalpy. The value in parentheses (column 5) was the enthalpy potential or the sensible enthalpy based on the equation

$$\sum_i \int_0^T C_{p,i} dT \quad \sigma_i(T) = \sum_i \quad H_{f,i}^{298} + \int_{298}^T C_{p,i} dT \quad \sigma_i(T)$$

$$- \sum_i \quad H_{f,i}^{298} + \int_{298}^{300} C_{p,i} dT \quad \sigma_i(T) + \sum_i \int_0^{300} C_{p,i} dT \quad \sigma_i(T)$$

where: $C_{p,i}$ is specific heat at constant pressure, Btu/lb_m - ^{o}R, and $\sigma_i(T)$ is the mass fraction of the specie i as a function of temperature and H_f is fuel enthalpy.

Cooling and surface-pressure parameters.- Surface pressures, cumulative surface-pressure integrals, cumulative cooling losses, cumulative surface area, and pressure ratios for axial distances from the AIM virtual spike tip are listed on pages 4 and 5.

Definitions and units of the parameters are as follows:

XABS - axial distance from virtual spike tip, in
P-IB - surface pressure on innerbody, psia
P-ØB - pressure on cowl inner surface, psia
PDA - cumulative surface-pressure integral, $\int_0^{X_{ABS}} PdA$, lb_f

QØX - cumulative total cooling loss, Btu/sec
Q-IB - cumulative cooling loss from innerbody, Btu/sec
Q-ØB - cumulative cooling loss from outerbody, Btu/sec
CAWALL - cumulative surface area, sq in
P-IB/PSØ - innerbody static to wind-tunnel static-pressure ratio
P-IB/PTØ - innerbody static to wind-tunnel total-pressure ratio
PØB/PSØ - outerbody surface static to wind-tunnel static-pressure ratio
PØB/PTØ - outerbody surface static to wind-tunnel total-pressure ratio

Drag and heat-transfer coefficients.- Longitudinal values of drag force and drag and heat-transfer coefficients are listed on page 6 (for some cases on page 6 and 7). Definition and units of the parameters are as follows:

X - axial distance from spike virtual tip, in
DDRAG - incremental frictional drag force, lf_f
CDRAG - cumulative frictional drag force, lb_f
C_F - friction-drag coefficient
HC - heat-transfer coefficient, Btu/(sec-sq ft-^oR)

Ramjet performance.- AIM performance parameters and pertinent information are contained on page 7 (page 8 for some cases). The performance parameters are generally self-explanatory; detailed discussion about the methods of computation are presented in references 6 and 9. Parameters listed below STATIONS are presented since they are related (except for the inlet throat) to the cowl leading-edge station. The NOMINAL COWL LEADING EDGE refers to the x_{CL} (table 3) value for the Mach 6 design operating position. SPIKE TRANSLATION is the recorded distance between the nominal and the actual x_{CL} value (this distance is designated as $\Delta\Delta x$ in symbols and used in figure 3(a)); all dimensions other than those for the inlet spike are corrected by this amount.

The fuel injectors and their corrected stations in inches are shown. A letter in the VALVE column indicates the injectors that were in use during the respective time. Table 5 indicates the general fuel equivalence ratio values for the various injector stages. The actual fuel equivalence ratio, however, for each injector can be determined by noting the step increases in the PHI column on the output, pages 1-3, for the respective time (ignore 0.01 or 0.02 changes); the step difference at the combustor station corresponding to the indicated injector station is the ϕ-value for the respective injector.

SUMMARY OF TESTS

The Hypersonic Research Engine/Aerothermodynamic Integration Model was tested in the NASA Hypersonic Tunnel Facility at the Plum Brook Station of the NASA Lewis Research Center. Synthetic air (heated nitrogen with proper amount of oxygen added) was delivered by the facility at nominal Mach numbers of 5, 6, and 7. The Mach 5 and 6 tests were conducted at true air temperature while Mach 7 tests were conducted at Mach 6 temperature (3000° R) because of heater deficiency. Changes in total temperature and instream oxygen content at Mach 5 and 7 were also explored. The hydrogen fuel was heated up to 1500° R prior to injection to simulate a regeneratively cooled system.

The engine testing was completed with an accumulated actual running time of about 112 minutes with 41.5 minutes of combustor operation. The important achievements realized from this test program which advanced the state-of-the-art in hypersonic propulsion were discussed in detail in reference 9 and are:

1. Realistic engine performance levels for hypersonic flight were obtained from Mach 5 to 7.

Test Mach No.	Equivalence Ratio	Internal Thrust Coefficient	Internal Specific Impulse
5.1	1.0	0.910	2740
6.0	1.0	0.735	2360
7.25	1.0	0.570	2170

2. Engine inlet performance agreed well with theoretical prediction. Combustor efficiency of 95 percent was achieved. Nozzle vacuum thrust coefficient was lower than predicted.

3. The interaction effects in staged fuel injection were very important in achieving auto-ignition, high combustor efficiency, and overall performance. High supersonic combustor efficiency in a diverging duct was difficult to achieve. The strong stage interaction effects discovered during these tests may be used to great advantage in future designs.

4. The "transonic combustion" or "mixed combustion mode" was the most efficient heat addition process in the range of Mach numbers and temperatures tested in this program.

5. The effects of ignitors, altitudes, spike translation, fuel schedules, angle of attack, step and struts, inlet gas composition, inlet total temperature, and component interactions were investigated and correlated.

6. Stable subsonic and supersonic combustion and convertibility over a range of fuel equivalence ratios at Mach 5 and 6 was demonstrated.

7. The overall cooling load and its distribution as compared with theoretical prediction was determined.

8. Experience was acquired in free jet testing in a ground test facility with large model blockage and combustion.

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Table 1. - Summary of planned HRE/AIM wind tunnel tests.

(obtained from ref. 9 and 15)

RUN	M_0	PTO, PSIA	TTO, °R	α	FUEL SYSTEMS	FUEL SCHED.	INLET ΔX, IN.	COMBUSTION MODE	RUN TYPE AND PURPOSE
1	6	466	1500	0	-	-	4.23	-	Purge force, nominal case
2	6	466	1500	0	-	-	1.90	-	Purge force, effect of spike position
3	6	466	1500	3	-	-	4.23	-	Purge force, effect of angle of attack
4	6	466	2000	0	-	-	4.23	-	Operation checkout, effect of higher TTO
5	6	466	3000	0	-	-	0, 1.71, 2.52 4.23, aft stop	-	Airflow calibration, effect of altitude
6	6	930	2946	0	-	-	0, 1.71, 2.52 4.23, aft stop	-	Airflow calibration, nominal case
7	6	930	2946	3	-	-	0, 1.71, 2.52 4.23, aft stop	-	Airflow calibration, effect of angle of attack
8	6	930	2946	0	1a, 1b	1	4.23	Supersonic	Inlet-combustor performance, ignition and inlet unstart limits
9	6	930	2946	0	1a, 1b, 2a, 2c	2	4.23	Supersonic	Inlet-combustor performance, injector optimization
10	6	930	2946	0	1c, 4, 2a, 2c	2	4.23	Supersonic	Inlet-combustor performance, injector optimization
11	6	930	2946	0	1a, 1b, 1c, 4	3	4.23	Supersonic	Inlet-combustor performance, injector optimization
12	6	930	2946	0	TBD	TBD	4.23	Supersonic	Inlet-combustor performance, injector optimization
13	6	466	3000	0	1a, 1b, 2a, 2c	2	4.23	Supersonic	Inlet-combustor performance, effect of altitude
14	6	700	3000	0	1a, 1b, 2a, 2c	2	4.23	Supersonic	Inlet-combustor performance, effect of altitude
15	6	930	2946	0	1a, 1b, 2a, 2c	2	Aft stop	Supersonic	Inlet-combustor performance, effect of spike position
16	6	930	2946	0	1a, 1b, 2a, 2c	2	2.52	Supersonic	Inlet-combustor performance, effect of spike position
17	6	930	2946	0	1a, 1b, 2a, 2c	2	1.71	Supersonic	Inlet-combustor performance, effect of spike position
18	6	930	2946	0	3a, 3b	4	4.23	Subsonic	Inlet-combustor performance, subsonic combustion
19	6	930	2946	0	3a, 3b	5	4.23	Subsonic & transition	Engine performance, subsonic combustion and transition
20	6	930	2946	0	1a, 1b, 2a, 2c	2	4.23	Supersonic	Engine performance, nominal case
21	6	466	2946	0	1a, 1b, 2a, 2c	2	4.23	Supersonic	Engine performance, effect of altitude
22	6	930	2946	3	1a, 1b, 2a, 2c	2	4.23	Supersonic	Engine performance, effect of angle of attack
23	7	520	1500	0	-	-	2.88	-	Purge force
24	7	520	3965	0	-	-	2.34, 2.88 3.24	-	Airflow calibration, effect of altitude
25	7	1000	3840	0	-	-	1.98, 2.88 3.24	-	Airflow calibration, nominal case
26	7	1000	3840	3	-	-	2.34, 2.88 3.24	-	Airflow calibration, effect of angle of attack
27	7	520 & 1000	3965 3840	0	1a, 1b	6	2.88	Supersonic	Inlet-combustor performance, ignition and inlet unstart limits
28	7	1000	3840	0	1a, 1b, 2a, 2c	7	2.88	Supersonic	Inlet-combustor performance, injector optimization
29	7	1000	3840	0	1c, 4, 2a, 2c	7	2.88	Supersonic	Inlet-combustor performance, injector optimization
30	7	1000	3840	0	1a, 1b, 1c, 4	8	2.88	Supersonic	Inlet-combustor performance, injector optimization
31	7	1000	3840	0	TBD	TBD	2.88	Supersonic	Inlet-combustor performance, injector optimization
32	7	522	3965	0	1a, 1b, 2a, 2c	7	2.88	Supersonic	Inlet-combustor performance, effect of altitude
33	7	700	3965	0	1a, 1b, 2a, 2c	7	2.88	Supersonic	Inlet-combustor performance, effect of altitude
34	7	1000	3840	0	1a, 1b, 2a, 2c	7	3.24	Supersonic	Inlet-combustor performance, effect of spike position
35	7	1000	3840	0	1a, 1b, 2a, 2c	7	2.34	Supersonic	Inlet-combustor performance, effect of spike position
36	7	1000	3840	0	1a, 1b, 2a, 2c	7	1.98	Supersonic	Inlet-combustor performance, effect of spike position
37	7	1000	3840	0	1a, 1b, 2a, 2c	7	2.88	Supersonic	Engine performance, nominal case
38	7	522	3965	0	1a, 1b, 2a, 2c	7	2.88	Supersonic	Engine performance, effect of altitude
39	7	1000	3840	3	1a, 1b, 2a, 2c	7	2.88	Supersonic	Engine performance, effect of angle of attack
40	5	445	1500	0	1a, 1b, 2a, 2c	-	4.23	-	Purge force
41	5	206	2210	0	1a, 1b, 2a, 2c	-	4.23	-	Airflow calibration
42	5	415	2210	0	1a, 1b, 2a, 2c	9	4.23	Supersonic	Inlet-combustor performance, nominal case effect of altitude
43	5	415	2210	0	1a, 1b, 2a, 2c	TBD	4.23	Supersonic	Inlet-combustor performance, and ignitor flow rate
44	5	415	2210	0	1a, 1b, 2a, 2c	9	4.23	Supersonic	Engine performance, supersonic combustion
45	5	415	2210	0	3a, 3b	10	4.23	Subsonic	Engine performance, subsonic combustion
46	5	415	2210	3	1a, 1b, 2a, 2c	11	4.23	Subsonic & Supersonic	Engine performance, effect of angle of attack

Table 2. - HRE/AIM Test Run Summary (obtained from ref. 5).

Run No.	Reading No.	Date	Inlet Condition: Mach No.	Inlet Condition: P_{T0}, Psia	Inlet Condition: T_{T0}, °R	Inlet Spike Position, Δx, in.	Fuel Injectors Used	* Tunnel Config.	Time: Run Min	Time: Run Sec	Time: Useful Min	Time: Useful Sec	Objective of Test	Comments
1	1 through 5	9/14/72	-	-	-	-	-	A	-	-	-	-	*Pre-run reference* No-airflow engine Purge system calibration	*Data not valid due to mechanical interference between AIM and* outer cowl body
2	6	10/31/72	6	466	1500/2100	4.266	-	A	-	40	-	-	Facility and engine checkout	Test terminated due to cooling system overpressure abort system failure.
3	7	11/1	6	466	1500	4.266	-	A	2	26	-	-	Same as run 2	Tunnel nozzle started. Inlet started. Strong shocks in test section. Cell pressure ~ 2.0 psia.
4	8	11/2	6	466	1500	4.266	-	A	-	5	-	1	Establish facility operational procedure	Test aborted due to facility problem (TAFP).
5	9	11/16	6	466	1500	4.266	-	B1	-	-	-	-	Same as run 4	Facility shroud extended and washer added to assist tunnel start (TAFP).
	10	11/16	6	466	1500	4.266	-		-	-	-	-	Same as run 4	TAFP
	11	11/16	6	466	1500	4.266	-		2	39	-	99	Same as run 4	Nozzle start and inlet start obtained Cell pressure ~ 1.2 psia. Wedge nozzle pressure changed from 50 to 60 psia. No improvement in cell pressure.
6	12	11/21	6	466	2250	3.962	-	B1	-	-	-	-	Same as run 4	TAFP
	13	11/21	6	466	2250	3.962	-		1	07	-	-	Same as run 4	Wedge nozzle pressure 55 to 90 psig. No tunnel nozzle start. Nozzle started when inlet closed for shutdown.
7	14	11/21	6	466	2950	3.962	-	B1	-	34	-	-	Same as run 4	TAFP
8	15	12/8/72	6	466	2950	4.266	-		-	16	-	-	Same as run 4	TAFP
9	16	1/18/73	6	466	2800	4.266	1C, 4	B1	-	35	-	-	Same as run 4	First combustion attempt. TAFP
	17	"	"	"	"	"	1C, 4		1	06	-	-	Same as run 4	Nozzle start not obtained. TAFP.
	18	"	"	"	"	"	1C, 4		1	00	-	-	Same as run 4	Nozzle start obtained by cycling inlet spike open and closed. Inlet start obtained. Fuel ramped to equivalence ratio = .25 prior to tunnel unstart and TAFP.
10	19	2/2	6	466	2950	0.99/ 4.00	-	B1	-	13	-	-	Same as run 4	Nozzle start with inlet partially open. (Δ x = 0.99). TAFP. No fuel injected.
11	20	2/2	6	466	2950	0.99/ 4.00	1C, 4	B1	1	02	-	-	Same as run 4	No start at Δx = 0.99. Nozzle started by cycling inlet spike. Combustor lit causing tunnel unstart.
12	21	2/15/73	6	750	3000	0.99/ 4.00	-	C1	-	-	-	-	Establish facility operational procedure	Jet pump installed. Test aborted due to freezing of coolant supply system.
13	22	2/21	6	750	3000	0.99/ 4.00	-	C1	-	22	-	-	Same as run 12 above	Jet pump used for this test. Nozzle start obtained. Unstart experienced when inlet was opened. Test aborted manually. Nozzle restart noted during shutdown.
14	23	2/21	6	750	3000	0.99/ 4.00	-	C1	-	58	-	-	Same as run 12 above	Jet pump and wedge nozzle inlet pressure varied. Nozzle start was not obtained. Use of jet pump did not affect test chamber pressure. Seals between AIM support struts and facility shroud blown out.
15	24	2/23	6	750	3000	0.99/ 4.00	-	C2	-	-	-	-	Same as run 12 above	Jet pump inactivated. TAFP
	25	2/23	6	750	3000	0.99/ 4.00	-	C2	-	-	-	-	Same as run 12 above	TAFP
	26	2/23	6	750	3000	0.99/ 4.00	1A, 1B	C2	-	49	-	-	Same as run 12 above	Nozzle start and engine start obtained. Fuel injected for 4 seconds prior to nozzle unstart. Unstart attributed to excessive fuel injected caused by facility valve malfunction.
16	27	3/1	6	930	3100	0.99/ 4.00	-	C2	1	42	-	-	Same as run 12 above	Nozzle start and inlet start obtained. Jet pump inactivated. Fuel was injected, engine inlet unstart experienced 12 seconds later. Inlet start reestablished and fuel again injected. Inlet unstart experienced 9 seconds later. Test was manually aborted. Cowl leading edge assembly separated from the outer body. Cause of the separation was attributed to failure of the screw heads. The failure was caused by overheating of the screw heads resulting from ingesting the hot tunnel environment into this area. Ingestion of tunnel ambient was the result of a shock standing on the AIM cowl. Additional diagnostic instrumentation was installed in the facility shroud and diffuser.
17	28	3/16	6	930	3100	0.99/ 4.00	1A, 1B	B2	1	11	-	-	Establish facility operational procedure to obtain hypersonic airflow.	Tunnel configuration same as config. B except washer inside diameter changed to 44.5 inches. Tunnel unstart observed 19 seconds after fuel introduced. Start reestablished. Test manually aborted 3 seconds later when excessive heating of HRE-AIM cowl leading edge assembly mount flange was noted. Excessive heating of the external skin of the AIM was noted.

* see figure 5-9, reference 5

Table 2. - Continued.

Run No.	Reading No.	Date	Inlet Condition: Mach No.	Inlet Condition: P_{T0}, Psia	Inlet Condition: T_{T0}, °R	Inlet Spike Position, Δx, in.	Fuel Injector Used	Tunnel Config.	Time: Run Min	Time: Run Sec	Time: Useful Min	Time: Useful Sec	Objective of Test	Comments
18	29	3/22	6	930	3100	0.99/ 4.00	1A, 1B	C1	-	36	-	-	Same as run 17 above	Re-run of reading 23 with seal repaired. Jet pump did not improve tunnel start.
19	30	4/27	6	750	2000	0.99/ 4.00	Fuel injec. not planned	D	1	16	-	-	Same as run 17 above	Shroud inlet washer replaced with cone-cylinder and 15° conical diffuser inlet contraction replaced with 7° cone; tunnel nozzle did not start.
20	31	4/30	6	750	2000	0.99/ 4.00	Fuel injec. not planned	E	-	51	-	-	Establish operational procedure	First run with fully started tunnel. Shroud inlet cone cylinder replaced with original 46 in. diameter washer. Tunnel start obtained when inlet spike was cycled twice; supersonic flow in diffuser. Test terminated when target conditions achieved due to limited supply of nitrogen. Test cell pressure was 1.2 psia.
21	32	4/30	6	750	2000	0.99/ 4.00	Fuel injec. not planned	E	1	42	-	-	Determine effect of varying wedge nozzle flow	Tunnel config. Identical to run 20. Tunnel start obtained when inlet spike cycled twice. Test cell pressure of 1.0 psia obtained. Wedge nozzle has negligible effect on cell pressure.
22	33	5/4	6	750		0.99/ 4.00	1B, 2B	E	1	25	-	-	Investigate inlet unstart limit with first stage combustion	First successful supersonic combustion run. Intentional inlet unstart when first stage equivalence ratio reached 0.34. No second stage fuel added. O-ring between the outerbody and the cowl leading edge extruded.
23	34	5/15/73	6	750/ 930	3000	0.99/ 4.00	1A, 1B, 2A, 3A	E	2	08	-	-	Checkout AIM and facility. Fuel rich at P_{T0} = 750 psia ϕ = 1.0 at P_{T0} = 930 psia	Tunnel start and inlet start obtained. ϕ of 1.35 set at P_{T0} = 150 psia and ϕ of 1.00 set at P_{T0} = 930 psia. Facility fuel control value for injector 1B oscillated. Run proved AIM and tunnel can operate at $\phi > 1.0$. Erosion of zirconium oxide coating on outer cowl body crossover manifold noted. Erosion caused by carbon dust in tunnel flow.
24	35	5/16/73	6	750	3000	0.99/ 4.00	1A, 1B, 2A, 2C	E	-	25	-	-	Checkout AIM and facility. Design injector locations	Test was aborted when engine inlet unstart was observed three seconds after initiation of fuel injection. The engine unstart was result of injecting excessive fuel, caused by malfunction of facility control valve. Inspection of the unit revealed that the coolant leak on the spike assembly had progressed, and repair was necessary.
25	36	5/24	6	750	3000	0.99/ 4.00	1A, 1B, 2A, 2C	E	2	19	1	38	Demonstrate operation with design injector location and determine auto ignition limit	First good run with design injector locations. Auto ignition obtained at ϕ = 0.55; first stage did not light until second stage fuel added. Overall ϕ ramped to 1.0 with first stage ϕ held at 0.24.
26	37	5/30/73	6	750	3000	0.99/ 4.00	-	E	-	-	-	-	Determine effect of first stage ϕ on combustor performance	Test aborted due to malfunction of the steam ejector system
	38	5/30	6	750	3000	0.99/ 4.00	1A, 1B, 2A, 2C	E	-	47	-	26	Determine effect of first stage ϕ on combustor performance	Test aborted when inlet unstarted. Malfunction of the facility fuel control valve resulted in injecting excessive fuel into injector 2C. 3 small cracks in spike skin in region of ignitors found in post run inspection. Cracks repaired to prevent water leak into combustor.
	39 thru 48	-	-	-	-	-	-	E	-	-	-	-	Purge system calibration test	
27	49	10/4/73	6	750	3000	-	-	E	-	-	-	-	Combustor optimization	TAFP
	50	10/5/73	6	750	3000	-	-						Combustor optimization	TAFP
	51	10/5/73	6	750	3000	0.99/ 4.00	1A, 1B, 2A, 2C	E	2	39	2	09	Combustor optimization	Fuel control problems encountered.
28	52	10/10/73	6	750	3000	0.99/ 4.00	1A, 1B, 2C, 4	E	1	21	-	50	Combustor optimization	Investigating performance improvement due to injecting fuel closer to inlet. Inlet unstarted at overall ϕ of .83.
	53	10/10	-	-	-	-	-	E	-	-	-	-	Purge system calibration test. Evacuated test cell.	
29	54	10/11/73	6	750	3000	0.99/ 4.00	1A, 1B, 2A, 2C	E	3	04	2	13	Combustor optimization	Attempt to determine effect of first stage ϕ and thrust on performance. Auto ignition obtained at ϕ = .54. Data taken with ignitors on and off to determine effect on performance. Inspection of unit revealed excessive coolant leak at spike/ignitor body interface. Repair necessary. Tunnel operating procedure modified to reduce water ingestion into AIM wall pressure taps.
	55	10/17/74	-	-	-	-	-	E	-	-	-	-	Purge system calibration evacuated test cell	
30	56	11/2/73	6	750	3000	-	-	E	-	-	-	-	Combustor optimization	Effect of fuel split between 1st and second stage injectors at overall ϕ = 1.0 investigated. Also all second stage fuel added from innerbody side (system 2C). Fuel system purges turned off to determine effect on combustor wall pressure distribution. Found thrust measurement affected by thermal expansion of fuel manifold 1B. Inlet unstarted at overall ϕ of 1.0 with first stage ϕ = 0.36. Cavity pressure tap PA2 repaired for this run. Encountered fuel control problems.

Table 2. - Continued.

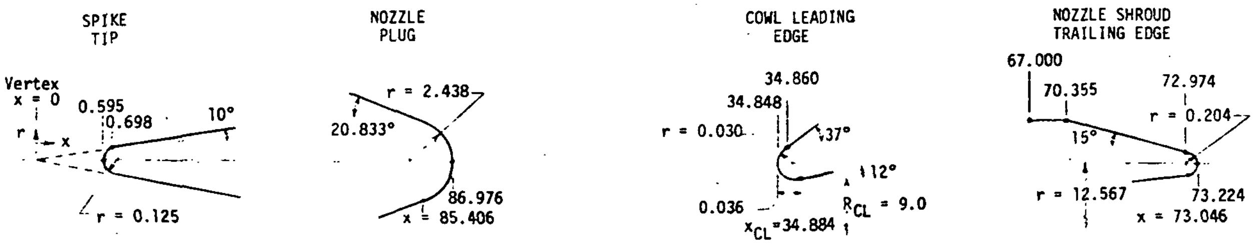
Run No.	Reading No.	Date	Inlet Condition: Mach No.	Inlet Condition: P_{TO}, Psia	Inlet Condition: T_{TO}, °R	Inlet Spike Position, Δx, in.	Fuel Injectors Used	Tunnel Config.	Time: Run Min	Time: Run Sec	Time: Useful Min	Time: Useful Sec	Objective of Test	Comments
	57	11/2/73	6	750	3000	0.99/ 4.00	1A, 1B, 2A 2C	E	-	-	-	-		
	58	11/7/74	-	-	-	-	-	E	-	-	-	-	Purge system calibration	Determine effect of thermal expansion of fuel manifold 1B.
31	59	11/8/73	6	750	3000	-	-		-	-	-	-	Combustor optimization	TAFP
	60	11/8/73	6	750	3000	0.99/ 4.00	1A, 1B, 2A, 2C	E	2	34	2	04	Combustor optimization	Overall ϕ held constant while amount of fuel from innerbody and outerbody injectors varied. Fuel temperature compensation added to fuel control
32	61	11/13/73	6	750	3000	0.99/ 1.72/ 2.52	1A, 1B, 2A, 2C	E	2	50	2	21	Determine effect of spike position on engine performance	Inlet massflow ratios of 0.81 and 0.58 ran by varying the inlet spike position. AIM wall pressure distribution measured with fuel line purge flow shut off. Reworked section of the innerbody assembly burned and damaged during combustion; damaged section was removed. Operational procedure modified to prevent further damage.
33	62	11/20/73	6	930/ 466	3000			E					Performance test	TAFP
	63	11/21/73	6	930/ 466	3000	0.99/ 4.00	1A, 1B, 2A, 2C		2	59	1	52	Performance test	Tunnel total pressure varied to determine effect of altitude on performance.
34	64	11/28/73	6	750	3000	0.99/ 4.00	1B, 2A, 2C, 3A, 3B	E	3	38	2	35	Subsonic-supersonic combustor mode transition	Transition from subsonic to supersonic combustion mode demonstrated. Inspection of unit revealed coolant was flowing into the 1B fuel manifold and a nickel plated section of the innerbody had blistered. Separation at the spike skirt-spike body has progressed to approximately 1.0 inches. Forward facing step at the interface of the cowl leading edge assembly and the outerbody had progressed to approximately .065 inches. Larger fuel metering venturi installed in fuel system E.
35	65	12/11/73	6	750	3000	4.00	1A, 1B, 2A, 2C	E	2	52	1	44	Supersonic combustion with instrumentation rig	Instrumentation rake installed. Rake caused tunnel to unstart at ϕ = 1.05. Exhaust gas sampling data taken.
	66	12/14	-	-	-	-	-	E	-	-	-	-	Purge system calibration	TAFP
	67	12/14	-	-	-	-	-		-	-	-	-	Purge system calibration	N_2 purge force calibration with cell evacuated.
36	68	12/14/73	6	750	3000	-	-		-	-	-	-		Time of steady state fuel flow increased to 20 seconds to allow gas sampling data to stabilize.
	69	12/14/73	6	750	3000	4.00	1A, 1B, 2A, 2C	E	3	20	2	17	Supersonic combustion	One tunnel unstart experienced near end of run. Several tunnel unstarts prevented by shutting off fuel. Incipient unstart detected by monitoring luminescent normal shock position in T.V. view of tunnel.
37	70	12/19/73	6	750	3000	-	-	E	-	-	-	-	Determine effects of angle of attack	Test terminated prematurely due to frozen vent valve.
	71	12/19/73	6	750	3000	4.00	1A, 1B, 2A, 2C		3	56	2	29		Cowl leading edge assembly removed after this run to remove facing step noted after reading 64.
	72												Purge system calibration	Calibration with 1B fuel injector manifold heated test cell evacuated.
47	73, 74, 75	1/22/74	7	1000	3200	-	-	F	-	-	-	-	Mach 7 facility check-out	Test aborted due to facility problems (TAFP)
	76	1/23/74	7	1000	3200	-	-	F	-	-	-	-	Mach 7 facility check-out	TAFP
	77	1/23/74	7	1000	3200	2.57	-	F	2	-	-	-	Mach 7 facility check-out	Attempt to start tunnel at Mach 7 unsuccessful. Secondary steam ejector used; wedge nozzle pressure varied; inlet spike assembly translated.
48	78	1/25/74	7	1000	3500	2.57	-	G	2	-	-	-	Mach 7 facility check-out	Test aborted while attempting tunnel start. TAFP. Unusual amount of carbon dust deposited on AIM.
49	79	2/15/74	7	1000	3100	-	-	G1	-	-	-	-	Facility check-out	AIM moved aft 5.5 inches.
	80	2/15/74	7	1000	3100	2.57	-	G1	-	-	-	-	Facility check-out	TAFP (dewar water system frozen).
	81	2/20/74	7	1000	3300	2.57	2A, 2C	G2	2	38	-	-	Facility check-out	Blowout doors installed in tunnel closure. Tunnel started when wedge nozzle pressure reduced. Tunnel unstarted when combustor lit. Restart not obtained due to change in wedge nozzle inlet pressure.
50	82	2/22/74	7	1000	3300	-	-	G2					Facility check-out	TAFP. Seal around outer cowl body support damaged.
	83	2/22/74	7	1000	3300	2.57	-	G2	2	05	-	-	Facility check-out	Tunnel start not obtained.
51	84, 85, 86	2/28/74	7	1000	3300	-	-	G2	-	-	-	-	Facility check-out	TAFP
	87	2/28/74	7	1000	3300	2.57	1A, 1B, 2A, 2C		2	46	1	30	Facility check-out	Tunnel nozzle started. Unstarted at ϕ ~ 0.8

Table 2. - Concluded.

Run No.	Reading No.	Date	Inlet Condition: Mach No.	Inlet Condition: P_{TO}, Psia	Inlet Condition: T_{TO}, °R	Inlet Spike Position, Δx, in.	Fuel Injectors Used	Tunnel Config.	Time: Run: Min	Time: Run: Sec	Time: Useful: Min	Time: Useful: Sec	Objective of Test	Comments
52	88	2/28	7	1000	3100	2.57	1A, 1B, 2A, 2C	F	2	45	1	31	Combustion evaluation	First successful Mach 7 run. Tunnel closure removed. Diffuser seal repaired. Effect of fuel injection location investigated. Row 2 ignitors on. Outer cowl body support damaged by carbon particles in tunnel flow due to failure of carbon part in facility heater. Shroud inlet pressure rake hit and damaged. Repaired outer cowl body support and water cooled protective wedge installed. Coolant leak at the interface of spike skirt and spike body noted at angular location 270° in addition to leak at 180 degrees noted in Rdg 64. Leak at 180° progressed to approximately 1.25 inches. Cowl leading edge tip radius and spike tip damaged by particles. Damaged areas reworked.
53	89	3/15/74	7	1000	3000	2.57	1A, 1B, 2A, 2C, 4	F	3	-	2	02	Combustor optimization	Performance measured with various fuel injection schemes. T_{TO} varied during run. Ignitors on. Test terminated prematurely due to failure of transducer in fuel control causing fuel control valve to fully open. Abnormal amount of carbon dust observed in tunnel flow. Cowl leading edge tip radius and spike tip again damaged. Tip section repaired.
54	90	3/8/75	7	1000	3000	2.57	1A, 1B, 1C, 4	F	3	09	1	16	Combustor optimization	Second stage fuel injection closer to inlet (injectors 1C, 4). Inlet unstarts encountered.
55	91	3/12/74	7	1000	3000	2.57	1A, 1B, 2C, 4	F	2	52	1	32	Effect of angle of attack	Tunnel start improved at angle of attack. Tunnel started at P_{TO} = 850 psia. 3 inlet unstarts encountered due to excessive 1st stage fuel. Total coolant leak into combustor estimated to be 5.0 gpm.
56	92	3/18/74	7	1000	2900	2.57	1A, 1B, 2C, 4	F	3	50	2	30	Combustor performance with instrumentation rake installed.	Instrumentation rake blockage had adverse effect on tunnel start. Inlet spike stroked twice to start tunnel. Oxygen content of tunnel flow varied while AIM exhaust gas sampling data taken.
57	93	3/27/74	5	415	2210	4.0	1A, 1B, 2A, 3A, 3B	F	0	85	-	-	Facility check-out	First Mach 5 run. Subsonic combustion data obtained. Run terminated prematurely (TAFP).
58	94	3/28/74	5	(a) 415 (b) 300 (c) 206	2210 3000 2210	4.00 4.00 4.00	1A, 1B, 2A, 3A, 3B 1A, 1B, 2A, 3A, 3B 1A, 1B, 2A, 3A, 3B	F	2	25	2	01	Combustor optimization	Subsonic and supersonic combustion and transition demonstrated. Four unstarts experienced, three unstarts attributed to high cell pressure, one to injecting excessive fuel intentionally into the AIM. More carbon in tunnel flow. Cowl leading edge and spike tip damaged. Both reworked.
59	95	3/29/74	5	415 300 206	2210 3000 2210	4.00 4.00 4.00	1A, 1B, 2A, 2C 1A, 1B, 2A, 2C 1A, 1B, 2A, 2C	F	3	41	3	20	Combustor optimization	All comments made for Rdg 94 applicable for this run, except combustion was limited to supersonic combustion mode. Four engine unstarts experienced. Three unstarts were attributed to facility conditions and the other to programmed to determine inlet unstart limit.
60	96	4/15	5	415 300 206	2210 3000 2210	4.00 4.00 4.00	1A, 1B, 2A, 3A, 3B	F					Evaluate effects of angle of attack	Subsonic and supersonic combustion and transition demonstrated at angle of attack. Intentional engine unstart obtained when excessive fuel was injected in supersonic combustion mode.
61	97	4/22	5	206/415	2210	4.00	2A, 3A, 3B	F					Combustor performance with instrumentation rake installed	Combustor exit flow conditions surveyed. Gas sampling data taken. Blockage of instrumentation rake had adverse effect on tunnel operation.

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Table 3. - AIM aerodynamic coordinates
(Mach 6 cowl position, x_{CL} = 34.844 in.)



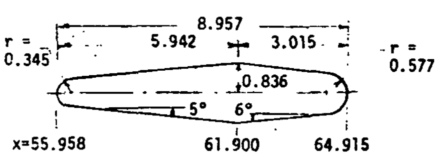
a) Centerbody

x, in.	r, in.	
0.595	0.0	90°
0.698	0.123	st. line
18.360	3.237	10°
19.304	3.411	
20.443	3.633	
21.691	3.885	
22.830	4.122	
23.850	4.338	
25.875	4.782	
26.766	4.985	
27.900	5.256	
28.904	5.518	
29.655	5.726	15.819°
30.360	5.926	
32.760	6.660	
34.080	7.140	22.0°
37.710	8.607	
38.070	8.734	
38.538	8.874	
38.826	8.942	
39.132	9.000	
39.780	9.096	
40.500	9.180	5.645° Throat
42.000	9.318	
43.400	9.415	
44.000	9.452	
45.000	9.518	
46.000	9.578	
47.000	9.624	
47.600	9.650	
48.400	9.670	0°
55.760	9.670	End of spike; step
55.760	9.406	
61.900	9.406	Thermal throat
65.740	9.406	
67.553	9.072	20.833°
85.406	2.278	
86.976	0.0	90°

b) Outerbody

x, in.	r, in.		
40.894	11.611		External
36.750	10.103		
36.250	9.975		
36.000	9.808		
35.750	9.685		
35.437	9.487	37°	
34.860	9.053		
34.848	9.029	90°	Internal
34.884	9.000	12°	
35.397	9.104		
35.874	9.192	10°	
36.171	9.241		
36.414	9.278	8°	
36.765	9.322		
37.494	9.398	5.645°	
40.500	9.695		
40.894	9.720		
41.894	9.810		
42.894	9.890		
43.894	9.960		
46.294	10.132		
55.760	10.873		
57.000	10.955		
58.000	11.000		
58.700	11.022		
61.900	11.022	Thermal throat	
65.980	11.022		
66.220	11.042		
66.740	11.132		
67.740	11.348		
68.780	11.572		
69.740	11.773		
70.820	11.989		
71.660	12.146		
72.260	12.249		
72.920	12.349		
72.980	12.357		
73.046	12.365		
73.224	12.567	90°	
72.974	12.791	15°	External
70.355	13.493		
67.000	13.493		

c) Internal struts (6)



(d) Cowl lip design positions

	x_{CL}, in.	Δx, in.	x_{CL}/R_{CL}
Close off	39.150	0.0	4.350
Inlet start	38.160	0.990	4.240
Mach 8	36.990	2.160	4.110
Mach 7	36.270	2.880	4.030
Mach 4 - 6	34.884	4.266	3.876

Table 4. - HRE/AIM Instrumentation
(obtained from ref. 5).

(a) Coding for instrumentation list.

The code for the instrumentation listed in the "Identification" column is as follows: Sample, S-P-14.492-0°11'-90-3 (A-B-C-D-E-F).

"A" designates the component on which the instrumentation is located:

S = inlet spike assembly

I = innerbody assembly

NP = nozzle plug assembly

CO = cowl leading edge assembly (outside)

C = cowl leading edge assembly (combustor side)

O = outerbody

N = nozzle shroud (combustor side)

NO = nozzle shroud (outside)

CE = combustor exit

EF = engine airflow-metering duct

F = fluids

"B" designates type of instrumentation

P = pressure

T = temperature

"C" designates the location of the instrumentation in terms of station, with the inlet spike assembly positioned for testing at Mach 6 condition.

"D" designates the angular location in degrees and minutes.

"E" designates position of the pressure pickup with respect to airflow in degrees, or, if the instrument is a temperature sensor, it designates the thermocouple:

CA = chromel alumel

CuC = copper constantan

P/rh = platinum-platinum/rhodium

"F" designates the leg through which the leads are brought out.

An "X" anywhere in the Identification Code indicates that the parameter was not applicable.

xxx/yy in the "Reading No." column indicates the Channel No. (xxx) on which the parameter was recorded, and the rated capacity (yy) of the transducer used.

The "N/U" Code in the "Reading No." Column indicates channels that were not used.

"LeRC Sys" - recorded on separate system, therefore no channel number.

Table 4. - Continued.

(b) Instrumentation list.

Measurement Number	Identification	31	33	34	36	37	38	51	57	61	63	64	65	69	70	73	78	84	88	89	91	92	93	96	97
		READING NUMBER																							
1-S	S-P - 0.595 - 0 - 0-3	121/25		*																					
2-S	S-P - 14.492 - 0°11' - 90-3	N/U		*																					
3-S	S-P - 14.483 - 271°8' - 90-3	123/10				123/10																			
4-S	S-P - 14.473 - 180°5' - 90-3	N/U		*																					
5-S	S-P - 14.4 - 90 - 90	Not Routed																							
6-S	S-P - 30.695 - 359°36' - 90-3	125/10		*																					
7-S	S-P - 35.085 - 359°34' - 90-3	126/10		*																					
8-S	S-P - 35.071 - 269°35' - 90-3	127/10		*																					
9-S	S-P - 35.071 - 179°28' - 90-3	259/25		*																					
10-S	S-P - 35.079 - 89°23' - 90-3	260/10		*																					
11-S	S-P - 35.580 - 359°32' - 90-3	261/10		*																					
12-S	S-P - 36.077 - 359°34' - 90-3	262/10		*																					
13-S	S-P - 36.487 - 359°30' - 90-3	263/10		*																					
14-S	S-P - 36.476 - 269°31 - 90-3	264/10		*																					
15-S	S-P - 36.476 - 179°27 - 90-3	265/25		*																					
16-S	S-P - 36.482 - 89°29' - 90-3	266/15														266/10									
17-S	S-P - 36.984 - 359°32' - 90-3	128/10																					128/15		
18-S	S-P - 37.5 - 0 - 90-3	Not Routed																							
19-S	S-P - 38.0 - 0 - 90-3	Not Routed																							
20-S	S-P - 38.017 - 269°27' - 90-3	122/10																					122/15		
21-S	S-P - 38.001 - 179°23' - 90	Not Routed																							
22-S	S-P - 38.00 - 270 - 90	Not Routed																							
23-S	S-P - 38.5 - 0 - 90	Not Routed																							
24-S	S-P - 39.024 - 359°25' - 90-4	129/20																					129/25		
25-S	S-P - 39.011 - 269°25' - 90-4	N/U		*																					
26-S	S-P - 38.996 - 179°23' - 90-4	N/U		*																					
27-S	S-P - 39.0 - 270° - 90	Not Routed																							
28-S	S-P - 39.497 - 359°24' - 90-4	130/25														130/15							130/25		
29-S	S-P - 40.027 - 359°24' - 90-4	131/25		*																					
30-S	S-P - 40.023 - 269°28' - 90-4	132/25		*																					
31-S	S-P - 40.015 - 179°25' - 90-4	267/25									267/50					267/25									
32-S	S-P - 40.015 - 89°20' - 90-4	133/25		*																					
33-S	S-P - 41-498 - 359°30' - 90-4	134/75														134/25					134/50		134/75		
34-S	S-P - 42.464 - 359°28' - 90-4	135/75														135/50							135/75		
35-S	S-P - 43.7 - 0 - 90	Not Routed																							
36-S	S-P - 43.7 - 90 - 90	Not Routed																							
37-S	S-P - 43.7 - 180 - 90	Not Routed																							
38-S	S-P - 43.7 - 270 - 90	Not Routed																							
39-S	S-P - 44.796 - 359°28' - 90-4	136/75														136/50					136/75				
40-S	S-P - 45.0 - 0 - 90	Not Routed																							
41-S	S-P - 47.315 - 359°28' - 90-4	268/75									268/100					268/50							268/75		
42-S	S-P - 47.301 - 269°22' - 90-4	137/75														137/50							137/75		
43-S	S-P - 47.289 - 179°15' - 90-4	138/75														138/50							138/75		
44-S	S-P - 47.309 - 89°20' - 90-4	139/75														139/50							139/75		
45-S	S-P - 48.109 - 359°28' - 90-4	269/75									269/100					269/50							269/75		
46-S	S-T - 24.0 - 359°45' -	Not Routed																							
47-S	S-T - 37.789 - 359°30' - CA-3	303/50mv		*																					
48-S	S-T - 38.017 - 354°35' - CA-3	N/U																							
49-S	S-T - 40.021 - 354°30' - CA-4	305/50mv		*																					
50-S	S-T - 41.965 - 359°30' - CA-4	306/50mv		*																					
51-S	S-T - 44.796 - 354°27' - CA-4	307/50mv		*																					
52-S	LVDT (Spike Position)	120/100mv = 4.372 inches				*																			
77-T	Load Cell	277/3000 lb = 20mv				*																			

*Continuous to end

s-80719

Table 4. - Continued.

(b) Continued

Measure-ment Number	Identification	READING NUMBER																							
		31	33	34	36	37	38	51	57	61	63	64	65	69	70	73	78	84	88	89	91	92	93	96	97
1-I	I-P - 54.519 - 359°49' - 90-3	143/20 →									143/25	143/50 →											143/100 →		→
2-I	I-P - 54.529 - 269°49' - 90-3	N/U →		N/U	186/50 →																		186/100 →		→
3-I	I-P - 54.512 - 179°41' - 90-3	141/75 →														141/50 →							141/75 →		→
4-I	I-P - 54.514 - 90° 0' - 90-4	N/U →		N/U	191/50 →																		191/100 →		→
5-I	I-P - 56.004 - 0°48' - 90-4	271/75 →														271/50 →							271/100 →		→
6-I	I-P - 56.0 - 32°30' - 90	Not Routed																							
7-I	I-P - 56.0 - 178°30' - 90	Not Routed																							
8-I	I-P - 56.0 - 262°30' - 90	Not Routed																							
9-I	I-P - 64.799 - 359°45' - 90-4	270/75 →														270/20 →							270/50 →		→
10-I	I-T - 54.0 - 0	Not Routed																							
11-I	I-T - 55.25 - 0	Not Routed																							
12-I	I-T - 60.0 - 0	Not Routed																							
13-I	I-T - 59.979 - 240° 0' - CA-3	308/50 mv }	→	*																					
14-I	I-T - 60.019 - 120° 0' - CA-4	290/50 mv }	→	*																					
15-I	I-T - 64.799 - 354°56' - CA-4	309/50 mv }	→	*																					

*Continuous to end

Measure-ment Number	Identification	READING NUMBER																							
		31	33	34	36	37	38	51	57	61	63	64	65	69	70	73	78	84	88	89	91	92	93	96	97
1-NP	NP-P - 66.640 - 59°54' - 90-4	144/20 →														144/10 →							144/25 →		→
2-NP	NP-P - 68.080 - 119°38' - 90-4	145/10 →																					145/20 →		→
3-NP	NP-P - 69.405 - 180° 8' - 90-4	146/10 }	→ *																						
4-NP	NP-P - 70.790 - 240°12' - 90-4	147/10 }	→ *																						
5-NP	NP-P - 70.465 - 300°12' - 90-4	148/10 }	→ *																						
6-NP	NP-P - 74.550 - 0°10' - 90-4	149/10 }	→ *																						
7-NP	NP-P - 77.400 - 60° 0' - 90-4	150/10 }	→ *																						
8-NP	NP-P - 81.295 - 120° 8' - 90-4	151/10 }	→ *																						
9-NP	NP-P - 84.105 - 180° 5' - 90-4	152/10 }	→ *																						
10-NP	NP-P - 86.967 - ℄ - X-4	153/10 }	→ *																						
11-NP	NP-T - 68.080 - 124°15' - CA-3	310/50 mv	→ *																						
12-NP	NP-T - 70.790 - 245°12' - CA-3	311/50 mv	→ *																						
13-NP	NP-T - 74.45 - 5	Not Routed																							
14-NP	NP-T - 81.300 - 125° 8' - CA-4	312/50 mv	→ *																						

*Continuous to end

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Table 4. - Continued.

(b) Continued.

Measurement Number	Identification	31	33	34	36	37	38	51	57	61	63	64	65	69	70	73	78	84	88	89	91	92	93	96	97
		READING NUMBER																							
1-CO	CO-P - 35.525 - 83° 2' - 90-4	N/U	→•																						
2-CO	CO-P - 35.514 - 172°58' - 90-4	155/25											N/U	155/25	155/15							N/U	155/15	125/20	N/U
3-CO	CO-P - 35.544 - 262°56' - 90-3	N/U		N/U	156/15									156/15									156/15	156/20	
4-CO	CO-P - 35.519 - 352°59' - 90-3	157/25												157/25		N/U	N/U	N/U	N/U	157/25			157/15		
5-CO	CO-P - 37.040 - 83° 4' - 90-4	N/U		N/U	158/10									158/10						158/10			158/10		
6-CO	CO-P - 37.044 - 173° 5' - 90-4	159/15												159/15									159/15		
7-CO	CO-P - 37.047 - 263° 5' - 90-3	N/U		N/U	160/10									160/10		N/U	N/U	N/U	N/U	160/10			160/10		
8-CO	CO-P - 37.044 - 353° 2' - 90-3	161/15												161/15			161/10			161/10			161/10		
9-CO	CO-P - 39.008 - 83° 7' - 90-4	N/U		N/U	162/10									162/10		N/U	N/U	N/U	N/U	162/10			162/10		
10-CO	CO-P - 39.004 - 173° 7' - 90-4	163/15												163/15									163/15		
11-CO	CO-P - 39.004 - 263° 1' - 90-3	N/U		N/U	164/10									164/10									164/10		
12-CO	CO-P - 39.000 - 353° 6' - 90-3	165/15												165/15		165/10							165/10		
13-CO	CO-P - 40.509 - 83° 6' - 90-4	N/U		N/U	166/10						166/15			166/15		N/U	N/U	N/U	N/U	166/15			166/15		
14-CO	CO-P - 40.507 - 173° 6' - 90-4	167/15												167/15		167/10						N/U	167/10		N/U
15-CO	CO-P - 40.504 - 263° 4' - 90-3	Not Routed																							
16-CO	CO-P - 40.500 - 353° 5' - 90-3	169/15												169/15		N/U	N/U	N/U	N/U	169/15		N/U	169/15	169/20	N/U
17-CO	CO-P - 40.004 - 210° 2' - 90-3	170/15												170/15						170/15			170/15		
18-CO	CO-P - 40.360 - 210° 7' - 75-3	N/U		N/U	171/10									171/10						171/10			171/10		
19-CO	CO-P - 40.680 - 210° 3' - 110-3	N/U		N/U	172/10									172/10						172/10			172/10		
20-CO	CO-P - 40.249 - 330° 1' - 135-3	173/15												173/15						173/15			173/15		
21-CO	CO-P - 40.654 - 330° 0' - 110-3	N/U		N/U	174/10									174/10		N/U	N/U	N/U	N/U	174/10		N/U	174/10		N/U
22-CO	CO-P - 40.004 - 0° 5' - 110-4	N/U		N/U	175/25																				
23-CO	CO-P - 40.364 - 359°57' - 75-3	N/U		N/U	176/10											N/U	N/U	N/U	N/U	176/10				176/15	
24-CO	CO-P - 40.655 - 0° 3' - 110-3	177/15												177/15		N/U	N/U	N/U	N/U	177/15		N/U	177/15		N/U
25-CO	CO-P - 40.209 - 180°10' - 135-4	178/15									178/20		N/U	178/20		N/U	N/U	N/U	N/U	178/20		N/U	178/20		N/U
26-CO	CO-P - 40.656 - 180° 5' - 110-4	179/15			179/25								N/U	179/25		N/U	N/U	N/U	N/U	179/25		N/U	179/25		N/U
31-C	C-P - 35.514 - 359°58' - 90-3	180/50															180/25						180/50		
32-C	C-P - 36.0 - 0 - 90	181/50															181/25						181/50		
33-C	C-P - 36.685 - 0° 8' - 90-4	182/50															182/25						182/50		
34-C	C-P - 36.694 - 180°10' - 90-3	183/50															183/25						183/50		
35-C	C-P - 37.034 - 0° 8' - 90-4	184/50															184/25						184/50		
36-C	C-P - 37.064 - 90°10' - 90-4	185/50															185/25						185/50		
37-C	C-P - 37.049 - 180° 7' - 90-3	N/U	→•																						
38-C	C-P - 37.034 - 270° 7' - 90	Damaged																							
39-C	C-P - 37.544 - 0°10' - 90-4	187/50															187/25						187/50		
40-C	C-P - 38.044 - 0°10' - 86-4	188/50															188/25						188/50		
41-C	C-P - 38.044 - 90°10' - 86-4	189/50															189/25						189/50		
42-C	C-P - 38.049 - 180° 7' - 86-4	190/50															190/25						190/50		
43-C	C-P - 38.041 - 210° 7' - 86-3	N/U	→•																						
44-C	C-P - 38.514 - 0° 5' - 94-4	192/50															192/25						192/50		
45-C	C-P - 39.014 - 0° 5' - 94-4	193/50															193/25						193/50		
46-C	C-P - 39.024 - 90° 7' - 94-4	194/50															194/25				194/50				
47-C	C-P - 39.019 - 180° 4' - 94-	Damaged																							
48-C	C-P - 39.014 - 270° 0' - 94-3	195/50															195/25						195/50		
49-C	C-P - 39.511 - 359° 4' - 94-3	196/50															196/25						196/50		
50-C	C-P - 39.995 - 0° 8' - 90-4	197/50															197/25						197/50		
51-C	C-P - 40.00 - 90° 7' - 90-4	N/U	→•																						
52-C	C-P - 39.994 - 180° 7' - 90-3	199/50															199/25						199/50		
53-C	C-P - 40.004 - 270° 5' - 90	Damaged																							
54-C	C-T - 37.044 - 7° 9' - CA-4	314/50 mv	→•																						
55-C	C-T - 39.014 - 7° 5' - CA-4	315/50 mv	→•																						
56-C	C-T - 39.994 - 7° 8' - CA-4	316/50 mv	→•																						
57-C	C-T - 40.0 - 90° - CA	Not Routed																							
58-C	C-T - 40.004 - 180° 7' - CA-3	N/U	→•																						
59-C	C-T - 40.000 - 277° 4' - CA-3	292/50 mv							N/U																N/U
60-CO	CO-T - 36.544 - 353° 2' - CA-3	313/50 mv	→•																						
61-CO	CO-T - 38.504 - 0 - CA	Not Routed																							

•Continuous to end

S-89720

Table 4. - Continued.

(b) Continued.

Measurement Number	Identification	31	33	34	36	37	38	51	57	61	63	64	65	69	70	73	78	84	88	89	91	92	93	96	97
1-0	0-P - 41.06 - 0°0' - 110-4	201/75															201/50								→
2-0	0-P - 41.06 - 180°0' - 110-4	272/75															272/50						272/75		→
3-0	0-P - 41.06 - 210°0' - 110-3	N/U		N/U	228/75												228/50								→
4-0	0-P - 41.06 - 330°0' - 110-3	N/U					N/U	200/75									200/50								→
5-0	0-P - 43.786 - 1°0' - 90-4	202/75									202/100						202/50						202/75		→
6-0	0-P - 43.786 - 90°0' - 90-4	N/U					N/U	203/75			203/100						203/50						203/75		→
7-0	0-P - 43.731 - 180°0' - 90-3	204/75															204/50						204/75		→
8-0	0-P - 43-786 - 270°0' - 90-3	N/U					N/U	205/75									205/50						205/75		→
9-0	0-P - 45.222 - 1°0' - 90-4	206/75															206/50						206/75		→
10-0	0-P - 47.016 - 1°0' - 90-4	273/75									273/100						273/50						273/75		→
11-0	0-P - 49.005 - 1°0' - 90-4	207/75															207/50						207/75		→
12-0	0-P - 49.020 - 90°0' - 90-4	N/U					N/U	219/50															219/75		→
13-0	0-P - 49.003 - 180°0' - 90-4	N/U	→ *																						
14-0	0-P - 49.005 - 270°0' - 90-3	N/U					N/U	198/50			198/15	598/75					198/50						198/75		→
15-0	0-P - 49.506 - 0° - 90-3	N/U																							→
16-0	0-P - 50.405 - 0° - 90-4	208/75															208/50						208/75		→
17-0	0-P - 50.411 - 90° - 90-4	N/U					N/U	221/50				221/75					221/50						221/75		→
18-0	0-P - 50.411 - 18° - 90-4	N/U																							→
19-0	0-P - 50.411 - 270° - 90-3	N/U																							→
20-0	0-P - 50.505 - 1° - 90-4	N/U																							→
21-0	0-P - 52.506 - 0° - 90-3	209/75															209/50						209/100		→
22-0	0-P - 53.008 - 1° - 90-4	210/75															210/50						210/100		→
23-0	0-P - 53.006 - 90° - 90-4	N/U					N/U	211/25			211/30						211/50						211/100		→
24-0	0-P - 53.006 - 180° - 90-4	212/75	N/U																						N/U
25-0	0-P - 52.993 - 270° - 90-3	N/U					N/U	212/25			212/30						212/50						212/100		→
26-0	0-P - 54.510 - 0° - 90-3	214/75															214/50						214/100		→
27-0	0-P - 56.496 - 0° - 90-4	215/75															215/50						215/100		→
28-0	0-P - 57.451 - 0° - 90-3	N/U					N/U	213/25			213/30						213/50						213/100		→
29-0	0-P - 58.473 - 0° - 90-4	216/75															216/50						216/75		→
30-0	0-P - 59.474 - 0° - 90-3	N/U																							→
31-0	0-P - 60.476 - 0° - 90-4	217/50										217/75					217/25						217/75		→
32-0	0-P - 61.870 - 0° - 90-3	218/50										218/75					218/25						218/75		→
33-0	0-P - 51.881 - 110° - 90-4	N/U																							→
34-0	0-P - 61.881 - 180° - 90-3	220/75															220/50						220/75		→
35-0	0-P - 61.874 - 290° - 90-3	N/U																							→
36-0	0-P - 62.976 - 0° - 90-4	N/U																							→
37-0	0-P - 63.974 - 0° - 90-4	N/U																							→
38-0	0-P - 64.975 - 1° - 90-4	222/20			222/50												222/15						222/75		→
39-0	0-T - 41.978 - 0° - CA-3	317/50mv	→ *																						
40-0	0-T - 42.581 - 0° - CA-3	318/50mv	→ *																						
41-0	0-T - 43.786 - 359° - CA-4	319/50mv	→ *																						
42-0	0-T - 45.234 - 359° - CA-	320/50mv	→ *																						
43-0	0-T - 46.507 - 0° - CA-3	289/50mv	→ *																						
44-0	0-T - 46.510 - 90° - CA-4	293/50mv	→ *																						
45-0	0-T - 46.520 - 180° - CA-3	294/50mv	→ *																						
46-0	0-T - 46.491 - 270° - CA-3	295/50mv	→ *																						
47-0	0-T - 47.016 - 359° - CA-3	321/50mv	→ *																						
48-0	0-T - 48.0 - 0° - CA-	Not Routed																							
49-0	0-T - 49.005 - 359° - CA-3	322/50mv	→ *																						
50-0	0-T - 50.005 - 0° - CA-3	323/50mv	→ *																						
51-0	0-T - 50.014 - 90° - CA	Not Routed																							
52-0	0-T - 50.014 - 180° - CA-4	296/50mv	→ *																						

*Continuous to end

Table 4. - Continued.

(b) Continued.

Measurement Number	Identification	31	33	34	36	37	38	51	57	61	63	64	65	69	70	73	78	84	88	89	91	92	93	96	97
53-0	0-T - 50.010 - 270° - CA-	Not Routed																							
54-0	0-T - 51.505 - 359° - CA-3	324/50mv																							
55-0	0-T - 52.010 - 0° - CA-4	325/50mv		→ *																					
56-0	0-T - 52.996 - 359° - CA-3	326/50mv																							
57-0	0-T - 54.0 - 0° - CA-	Not Routed																							
58-0	0-T - 55.0 - 0° - CA-	Not Routed																							
59-0	0-T - 56.00 - 0° - CA-3	327/50mv																							
60-0	0-T - 56.00 - 120° - CA-3	297/50mv																							
61-0	0-T - 56.00 - 240° - CA-4	298/50mv																							
62-0	0-T - 57.010 - 0° - CA-3	328/50mv																							
63-0	0-T - 57.970 - 0° - CA-3	329/50mv																							
64-0	0-T - 58.969 - 0° - CA-3	330/50mv																							
65-0	0-T - 59.976 - 0° - CA-4	331/50mv																							
66-0	0-T - 60.974 - 0° - CA-4	332/50mv		→																					
67-0	0-T - 62.474 - 0° - CA-4	333/50mv																							
68-0	0-T - 62.474 - 120° - CA-3	299/50mv																							
69-0	0-T - 62.474 - 240° - CA-4	300/50mv																							
70-0	0-T - 63.978 - 0° - CA-3	334/50mv																							
71-0	0-T - 64.475 - 0° - CA-4	335/50mv																							
72-0	0-T - 65.224 - 359° - CA-3	336/50mv																							
73-0	0-T - 66.0 - 0° - CA-	Not Routed																							

*Continuous to end

S-89693

Measurement Number	Identification	31	33	34	36	37	38	51	57	61	63	64	65	69	70	73	78	84	88	89	91	92	93	96	97
1-N	N-P - 66.635 - 298°55' - 80-3	223/20															223/10						223/25		→
2-N	N-P - 67.305 - 240° - 78-3	224/15		→																					
3-N	N-P - 68.18 - 180°	Not Routed																							
4-N	N-P - 68.800 - 118°49' - 90-3	225/10		→																					
5-N	N-P - 69.605 - 58°53' - 90-3	N/U →	N/U →	N/U →	226/10																				→
6-N	N-P - 70.360 - 358°6' - 90-3	227/10																							
7-N	N-P - 71.225 - 299°0' - 90-3	N/U		→																					
8-N	N-P - 72.320 - 235°5' - 90-3	229/10																							
9-N	N-P - 73.030 - 178°17' - 92.5-4	230/10			230/25												230/15								→
10-N	N-P - 73.224 - 0°10' - 188-4	N/U																							
11-N	N-P - 73.224 - 180°11' - 188-3	232/10																							
12-N	N-T - 67.330 - 237°57' - CA-4	301/50mv																							
13-N	N-T - 68.805 - 113°49' - CA-4	302/50 mv		→ †																					
14-N	N-T - 70.360 - 353°51' - CA-4	337/50mv																							
15-N	N-T - 72.300 - 240°7' - CA-4	338/50mv																							

†Continuous to end

S-89694

Measurement Number	Identification	31	33	34	36	37	38	51	57	61	63	64	65	69	70	73	78	84	88	89	91	92	93	96	97
16-NO	NO-P - 70.921 - 180°12' - 90-4	233/10											N/U	233/10								N/U	233/10		N/U
17-NO	NO-P - 70.917 - 330°8' - 90-3	234/10											N/U	234/10								N/U	234/10		N/U
18-NO	NO-P - 71.040 - 134°53' - 90-4	235/10											N/U	235/10								N/U	235/10		N/U
19-NO	NO-P - 71.054 - 150°10' - 90-4	N/U																	N/U	154/15					→
20-NO	NO-P - 71.053 - 155°35' - 90-4	237/10											N/U	237/10								N/U	237/10		N/U
21-NO	NO-P - 71.978 - 0°11' - 90-4	238/10											N/U	238/10								N/U	238/10		N/U
22-NO	NO-P - 71.965 - 180°12' - 90-4	239/10											N/U	239/10								N/U	239/10		N/U
23-NO	NO-P - 71.965 - 183°43' - 90-3	N/U																	N/U	168/15					→
24-NO	NO-P - 71.960 - 192°53' - 90-3	N/U		→ *																					
25-NO	NO-P - 71.955 - 201°13' - 90-3	242/10											N/U	242/10								N/U	242/10		N/U
26-NO	NO-P - 71.945 - 210°13' - 90-3	N/U		→																					
27-NO	NO-P - 71.925 - 219°3' - 90-3	243/10		N/U	243/10								N/U	243/10								N/U	243/10		N/U
28-NO	NO-P - 71.920 - 227°53' - 90-3	N/U		→ *																					
29-NO	NO-P - 71.920 - 236°41' - 90-3	245/10												245/10									245/10		→
30-NO	NO-P - 71.957 - 330°8' - 90-3	246/10												246/10									246/10		→
31-NO	NO-P - 71.971 - 340°19' - 90-4	247/10												247/10									247/10		→
32-NO	NO-P - 71.970 - 346°56' - 90-4	N/U		→ *																					
33-NO	NO-P - 71.970 - 353°35' - 90-4	249/10												249/10									249/10		→
34-NO	NO-P - 72.430 - 150°11' - 60-4	250/10												250/10									250/10		→

*Continuous to end

S-89718

Table 4. - Continued.

(b) Continued.

Measurement Number	Identification	31	33	34	36	37	38	51	57	61	63	64	65	69	70	73	78	84	88	89	91	92	93	96	97
		READING NUMBER																							
35-OC	OCB - P - 66.34 - X - 180-X	251/10		→ *																					
1-F	S-P - 1A - 172 - X-3	N/U																							
2-F	S-P - 1A - 25 - X-3	244/200						73/300																	→
3-F	S-P - 1C - 175 - X-3	N/U					N/U	74/300																	→
4-F	S-P - 1C - 25 - X-3	N/U		→ *																					
5-F	S-P - 2C - 175 - X-4	N/U	123/500		123/500	231/500	231/500	75/500																	→
6-F	S-P - 2C - 25 - X-4	N/U	124/500		124/500																				→
7-F	1-P - 3B - 95 - X-4	N/U					N/U	76/300																	→
8-F	1-P - 3B - 275 - X-4	N/U		→ *																					
9-F	0-P - 1B - 90 - X-4	240/200						77/300																	→
10-F	0-P - 1B - 270 - X-3	241/200		→ *																					
11-F	0-P - 4 - 90 - X-4	N/U					N/U	78/300																	→
12-F	0-P - 4 - 270 - X-X	Not Routed																							
13-F	0-P - 2A - 90 - X-X	Not Routed																							
14-F	0-P - 2A - 270 - X-3	N/U					N/U	79/500																	→
15-F	0-P - 3A - 90 - X-4	N/U	N/U	123/500				80/300																	→
16-F	0-P - 3A - 270 - X-3	N/U	N/U	124/500																					→
17-F	S-T - 1A - 188 - CA-3	53/50																							
18-F	S-T - 1A - 30 - CA-3	54/50																							
19-F	S-T - 1C - 180 - CA-4	55/50																							
20-F	S-T - 1C - 30 - CA-4	56/50																							
21-F	S-T - 2C - 180 - CA-3	57/50																							
22-F	S-T - 2C - 30 - CA-3	58/50																							
23-F	1-T - 3B - 90 - CA-4	59/50																							
24-F	1-T - 3B - 270 - CA-4	60/50																							
25-F	0-T - 1B - 90 - CA-4	61/50		→ *																					
26-F	0-T - 1B - 270 - CA-3	62/50																							
27-F	0-T - 2A - 90 - CA-4	63/58																							
28-F	0-T - 2A - 270 - CA-3	64/50																							
29-F	0-T - 4 - 90 - CA-4	65/50																							
30-F	0-T - 4 - 270 - CA-3	66/50																							
31-F	0-T - 3A - 90 - CA-4	67/50																							
32-F	0-T - 3A - 270 - CA-3	68/50																							
33-F	S-P - IGN O_2 - X - X-3	248/300																							
34-F	S-P - IGN O_2	Not Routed																							
35-F	0-P - IGN O_2 - X - X-4	236/300																					236/500		→
36-F	0-P - IGN O_2	Not Routed																							
37-F	S-P - IGN H_2 - X - X-4	252/300																					252/500		→
38-F	S-P - IGN H_2	Not Routed																							
39-F	0-P - IGN H_2 - X - X-4	253/300																					253/500		→
40-F	0-P - IGN H_2	Not Routed																							
41-F	S-P - H_2O IN (TIP) - X - X-4	Visually Monitored																							
42-F	1-P - H_2O IN (TIP) - X - X-4																								
43-F	ST-P - H_2O IN (LE) - X - X-4																								
44-F	ST-P - H_2O IN (SIDE) - X - X-4																								
45-F	0-P - H_2O IN - X - X-3																								

*Continuous to end

Table 4. - Continued.

(b) Continued.

Measurement Number	Identification	31	33	34	36	37	38	51	57	61	63	64	65	69	70	73	78	84	88	89	91	92	93	96	97
46-F	OC-P - H_2O IN (A) - X - X-4																								
47-F	OC-P - H_2O IN (B) - X - X-4																								
48-F	OC-P - H_2O IN (C) - X - X-4																								
49-F	OC-P - H_2O IN (D) - X - X-4																								
50-F	S-P - H_2O OUT (TIP) - X - X-4																								
51-F	I-P - H_2O OUT - X - X-3																								
52-F	ST-P - H_2O OUT (LE) - X - X-3	Visually Monitored																							
53-F	ST-P - H_2O OUT (SIDE) -X-X-3																								
54-F	O-P - H_2O OUT -X-X-3																								
55-F	OC-P - H_2O OUT (A) - X - X-3																								
56-F	OC-P - H_2O OUT (B) - X - X-3																								
57-F	OC-P - H_2O OUT (C) - X - X-3																								
58-F	OC-P - H_2O OUT (D) - X - X-3																								
59-F	S-ΔT - H_2O OUT - X - CuC-4	370/ΔSmv												386/Smv											
59-F	S-ΔT - H_2O IN - X- CuC-4													387/Smv											
60-F	I-ΔT - H_2O OUT - X - CuC-3	371/ΔTSmv												370/Smv											
60-F	I-ΔT - H_2O IN - X - CuC-4													371/Smv											
61-F	ST-ΔT - H_2O OUT LE - X - CuC-3	372/ΔTSmv													366/Smv										
61-F	ST-ΔT - H_2O IN LE - X - CuC-3														367/Smv										
62-F	ST-ΔT - H_2O OUT (SIDE) -X-CuC-3	373/ΔTSmv													368/Smv										
62-F	ST-ΔT - H_2O IN (SIDE) -X-CuC-4														369/Smv										
63-F	O-ΔT - H_2O OUT - X - CuC-3	374/ΔTSmv												372/Smv											
63-F	O-ΔT - H_2O IN - X - CuC-3													373/Smv											
64-F	HYD-P - IN - X - X-X	Visually Monitored																							
65-F	HYD-P - OUT - X - X-X																								
66-F	ΔT1B - 40.6 - 3 - CuC-4	375/ΔTSmv												374/Smv											
66-F	ΔT1A - 35.75 - 356 - CuC-3													375/Smv											
67-F	ΔT1B - 40.6 - 181 - CuC-4	376/ΔTSmv												376/Smv											
67-F	ΔT1A - 35.75 - 176 - CuC-3													377/Smv											
68-F	ΔT2D - 55.6 - 357 - CuC-3	377/ΔTSmv													352/Smv										
68-F	ΔT2C - 40.5 - 5 - CuC-4														353/Smv										
69-F	ΔT2D - 55.6 - 177 - CuC-4	378/ΔTSmv												388/Smv											
69-F	ΔT2C - 40.5 - 178 - CuC-4													389/Smv											
70-F	ΔT3F - 66.2 - 356 - CuC-3	379/ΔTSmv													359/Smv										
70-F	ΔT3E - 55.6 - 355 - CuC-3														358/Smv										
71-F	ΔT3F - 66.19 - 176 - CuC-4	380/ΔTSmv													351/Smv										
71-F	ΔT3E - 55.6 - 175 - CuC-4														350/Smv										
72-F	ΔT4H - 72.36 - 356 - CuC-4	381/ΔTSmv												378/Smv											
72-F	ΔT4G - 66.68 - 356 - CuC-4													379/Smv											
73-F	ΔT4H - 72.36 - 176 - CuC-4	382/ΔTSmv												380/Smv											
73-F	ΔT4G - 66.68 - 176 - CuC-4													381/Smv											

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Table 4. - Continued.

(b) Continued

Measurement Number	Identification	31	33	34	36	37	38	51	57	61	63	64	65	69	70	73	78	84	88	89	91	92	93	96	97
		READING NUMBER																							
74-F	ΔT5J - 40.0 - 4 - CuC-3	383/ΔT5mv													361/5mv										→
74-F	ΔT5K - 47.84 - 357 - CuC-3														363/5mv										→
75-F	ΔT5J - 40.0 - 184 - CuC-4	384/ΔT5mv													354/5mv										→
75-F	ΔT5K - 47.84 - 181 - CuC-4														355/5mv										→
76-F	ΔT6M - 50.8 - 358 - CuC-3	385/ΔT5mv													364/5mv										→
76-F	ΔT6L - 48.58 - 357 - CuC-3														365/5mv										→
77-F	ΔT6M - 50.8 - 178 - CuC-4	386/ΔT5mv													356/5mv										→
77-F	ΔT6L - 48.58 - 181 - CuC-4														357/5mv										→
78-F	ΔT7P - 66.10 - 356 - CuC-3	387/ΔT5mv												382/5mv											→
78-F	ΔT7N - 50.8 - 354 - CuC-3													383/5mv											→
79-F	ΔT7P - 66.10 - 176 - CuC-4	388/ΔT5mv												384/5mv											→
79-F	ΔT7N - 50.8 - 174 - CuC-4													385/5mv											→
80-F	O-ΔT - H_2O OUT - X - X-4	389/ΔT5mv												360/5mv											→
80-F	O-ΔT - H_2O IN - X - X-4													362/5mv											→
81-F	O-P - H_2O OUT - X - X-3	Visually Monitored																							
82-F	O-P - H_2O IN - X - X-4																								
83-F	I-T - H_2O - 52.8 - 27 - CA-3	390/5mv		→ *																					
84-F	I-T - H_2O - 57.8 - 30 - CA-4	391/5mv													391/5mv										→
85-F	PURGE CAVITY PA-1-X - X - X-3	254/25						254/50																	→
86-F	PURGE CAVITY PA-2-X - X - X-3	255/25			255/50																				→
87-F	PURGE CAVITY PB-1-X - X - X-3	256/25																							
88-F	PURGE CAVITY PB-2-X - X - X-3	257/25																							
89-F	INNER BODY CAV PRES - X - X-4	258/50																							
90-F	INNER BODY CAV TEMP - X-X-CA-	69/5																							
91-F	PURGE CAVITY TA1 - X - X - CA-	394/5mv		→ *																					
92-F	PURGE CAVITY TA2 - X - X - CA-	395/5mv																							
93-F	PURGE CAVITY TB1 - X - X - CA-	396/5mv																							
94-F	PURGE CAVITY TB2 - X - X - CA-	397/5mv																							
95-F		N/U																							
96-F		N/U																							
97-F		N/U																							
98-F		N/U																							
99-F		N/U																							
100-F	PURGE CAVITY	70/50																							
101-F	PURGE CAVITY	71/50		→ *																					
102-F	PURGE CAVITY	72/50																							

*Continuous to end

S-80310

Table 4. - Concluded.

(b) Concluded

Measurement Number	Identification	Reading Number 65	Reading Number 92	Reading Number 97
ICE	CE-PT - 66.74 - 0 - 00 - X	155/75	155/50	155/75
2	CE-PS - 67.04 - 0 - 13 - X	156/50	156/15	156/50
3	CE-PS - 67.04 - 0 - 109 - X	157/50	157/15	157/50
4	CE-PS - 67.04 - 0 - 193 - X	158/50	158/15	158/50
5	CE-PS - 67.04 - 0 - 283 - X	159/50	159/15	159/50
6	CE-PT - 66.74 - 110 - 00 - X	160/75	160/50	160/75
7	CE-PS - 67.04 - 110 - 18 - X	161/50	161/15	161/50
8	CE-PS - 67.04 - 110 - 108 - X	162/50	162/15	162/50
9	CE-PS - 67.04 - 110 - 198 - X	163/50	163/15	163/50
10	CE-PS - 67.04 - 110 - 288 - X	164/50	164/15	164/50
11	CE-PT - 66.74 - 180 - 00 - X	165/75	165/50	165/75
12	CE-PS - 67.04 - 180 - 1 - X	166/50	166/15	166/50
13	CE-PS - 67.04 - 180 - 91 - X	167/50	167/15	167/50
14	CE-PS - 67.04 - 180 - 181 - X	169/50	169/15	169/50
15	CE-PS - 67.04 - 180 - 271 - X	170/50	170/15	170/50
16	CE-PT - 66.74 - 280 - 00 - X	171/75	171/50	171/75
17	CE-PS - 67.04 - 280 - 355 - X	172/50	172/15	172/50
18	CE-PS - 67.04 - 280 - 85 - X	173/50	173/15	173/50
19	CE-PS - 67.04 - 280 - 175 - X	174/50	174/15	174/50
20	CE-PS - 67.04 - 280 - 265 - X	177/50	177/15	177/50
21	CE-PT - 66.74 - 330 - 00 - X	178/75	178/50	178/75
22	CE-PS - 67.04 - 330 - 3 - X	179/50	179/15	179/50
23	CE-PS - 67.04 - 330 - 93 - X	233/50	233/15	233/50
24	CE-PS - 67.04 - 330 - 183 - X	234/50	234/15	234/50
25	CE-PS - 67.04 - 330 - 273 - X	235/50	235/15	235/50
26	CE-G-GS - 30 - X - X	LeRC sys	LeRC	LeRC
27	CE-G-TT - 30 - P/R - X	LeRC sys	124/20	124/20
28	CE-G-RT - 30 - C/A - X	LeRC sys	142/20	142/20
29	CE-G-PT - 30 - X - X	237/75	237/50	237/75
30	CE-G-PS - 30 - X - X	238/60	238/30	238/60
31	CE-G-GS - 70 - X - X	LeRC sys	LeRC	LeRC
32	CE-G-TT - 70 - P/R - X	LeRC sys	81/20	81/20
33	CE-G-RT - 70 - CA - X	LeRC sys	231/20	231/10
34	CE-G-PT - 70 - X - X	239/75	239/50	239/75
35	CE-G-PS - 70 - X - X	242/60	242/30	242/60
36	CE-G-GS - 170 - X - X	LeRC sys	LeRC	LeRC
37	CE-G-TT - 170 - X - X	LeRC sys	82/20	82/20
38	CE-G-RT - 170 - X - X	LeRC sys	244/20	244/10
39	CE-G-PT - 170 - X - X	243/75	243/50	243/75
40	CE-G-PS - 170 - X - X	245/60	245/30	245/60
41	CE-G-GS - 260 - X - X	LeRC sys	LeRC	LeRC
42	CE-G-TT - 260 - X - X	LeRC sys	345/20	LeRC
43	CE-G-RT - 260 - X - X	LeRC sys	LeRC	LeRC
44	CE-G-PT - 260 - X - X	246/75	246/50	246/75
45	CE-G-PS - 260 - X - X	247/60	247/30	247/60
46	CE-G-GS - 350 - X - X	LeRC sys	LeRC	LeRC
47	CE-G-TT - 350 - X - X	LeRC sys	346/20	LeRC
48	CE-G-RT - 350 - X - X	LeRC sys	140/20	140/20
49	CE-G-PT - 350 - X - X	249/75	249/50	249/75
50	CE-G-PS - 350 - X - X	250/60	250/50	250/60

Table 5. - Summary of HRE/AIM test points used for analyses.

(a) Mach 6 component integration results.

Page No.*	Reading Number	Time	M_o	P_{T_o}, psia	T_{T_o}, °R	X_{CL}, in.	α	Inj.1/ϕ_1	Inj.2/ϕ_2	Inj.3/ϕ_3	ϕ_T	Ignitors 1, 2, 3	Purpose & Remarks
—	33**	126.95	6.0	750	3000	35.2	0°	0	0	0	0	No	No fuel injection
—		161.15						1A,1B/.24	0	0	0.24	1,2	1st stage only
—		168.0						1A,1B/.3	0	0	0.30		1st stage only
—	↓	174.65	↓	↓	↓	↓	↓	1A,1B/.36	0	0	0.36	↓	Max. φ, engine unstart
57	34	98.15	6.0	750	3000	35.2	0°	0	0	0	0	1,2	
65		104.45						1A,1B/.20	0	0	0.20		1st stage only
73		148.55						1A,1B/.23	2A/.58	0	0.81		1st and 2nd stages
81		181.85		↓				1A,1B/.21	2A/.56	3A/.39	1.16		Max. φ, 3 stages
89	↓	196.25	↓	940	↓	↓	↓	1A,1B/.15	2A/.44	3A/.32	0.91	↓	Max. φ, 3 stages
—	36 a	119.18	6.0	750	3000	35.2	0°	0	0	0	0	No	Auto ignition
—	a	124.58						1A,1B/.26	0	0	0.26		
97		132.68						1A,1B/.25	2A,2C/.34	0	0.59		
106		144.38						1A,1B/.24	2A,2C/.49	0	0.73		
115		158.78						1A,1B/.23	2A,2C/.69	0	0.92		
124	↓	173.18	↓	↓	↓	↓	↓	1A,1B/.22	2A,2C/.75	0	0.97	↓	↓
133	38	96.24	6.0	750	3000	35.2	0°	0	0	0	0	No	
141		107.05						1A,1B/.33	0	0	0.33		1st stage only
150		113.35						0	2C/.38	0	0.38		2nd stage only } transient data
158	↓	116.95	↓	↓	↓	↓	↓	1A,1B/.18	2C/.67		0.85	↓	
167	52	165.93	6.0	750	3000	35.2	0°	0	0	0	0	No	φ1A,1B and φ4,2C
175		172.23						1A,1B/.24	4,2C/.26	0	0.50		
183		180.33						1A,1B/.20	4,2C/.41	0	0.61		
191	↓	189.33	↓	↓	↓	↓	↓	1A,1B/.20	4,2C/.53	0	0.73	↓	↓
199	54	156.46	6.0	750	3000	35.2	0°	0	0	0	0	No	Constant φ1A,1B, φ2A,2C
207		185.26						1A,1B/.21	2A,2C/.64	0	0.85		ramped up 3 times
215		200.56						1A,1B/.23	2A,2C/.43	0	0.66		
223		222.16						1A,1B/.24	2A,2C/.25	0	0.49		
231		235.66						1A,1B/.24	2A,2C/.52	0	0.76	↓	
239		253.66						1A,1B/.18	2A,2C/.60	0	0.78	1.2	
247	↓	280.66	↓	↓	↓	↓	↓	1A,1B/.20	2A,2C/.61	0	0.81	No	↓
255	57	195.11	6.0	750	3000	35.2	0°	0	0	0	0	No	Optimized performance
263		207.71						1A,1B/.21	2A,2C/.73	0	0.94		
271		234.71						1A,1B/.32	2A,2C/.60	0	0.92		
279		265.31						1A,1B/.21	2A,2C/.36	0	0.57		
287	↓	287.81	↓	↓	↓	↓	↓	1A,1B/.20	2A,2C/.54	0	0.74	↓	↓
295	60	155.69	6.0	750	3000	35.2	0°	0	0	0	0	No	Variation of fuel schedule
303		178.19						1A,1B/.21	2A,2C/.64	0	0.85		
311		186.29						1A,1B/.22	2A,2C/.65	0	0.87		
319		202.49						1A,1B/.21	2A,2C/.65	0	0.86		
327		223.19						1A/.21	2A,2C/.66	0	0.87		
335		230.39						1A,1B/.21	2A,2C/.67	0	0.88		
343		241.19						1B/.19	2A,2C/.68	0	0.87		
351		249.29						1B/.24	2A,2C/.68	0	0.92		
359		258.29						0	2A,2C/.76	0	0.76		
367	↓	264.59	↓	↓	↓	↓	↓	0	2A,2C/.80	0	0.80	↓	↓

*Reference 10

** Because of insufficient valid engine surface pressure measurements, performance results were not obtained.

a Listings not available.

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Table 5. - Continued.

(b) Mach 6 engine performance results.

Page* No.	Reading Number	Time	M_o	P_{T_o}, psia	P_{T_o}, ^oR	X_{CL}, in.	α	Inj.1/ϕ_1	Inj.2/ϕ_2	Inj.3/ϕ_3	ϕ_T	Ignitors 1, 2, 3	Purpose & Remarks
55	61	178.86	6.0	750	3000	36.7	0°	0	0	0	0	No	Effect of spike position
63		198.66						1A,1B/.13	2A,2C/.36	0	0.49		
72		205.86						1A,1B/.15	2A,2C/.49	0	0.64		
81		212.16						1A,1B/.15	2A,2C/.61	0	0.76		
90		222.06						1A,1B/.14	2A,2C/.73	0	0.87		
99		231.06				37.5	0°	0	0	0	0	No	Effect of spike position
108		243.66						1A,1B/.30	0	0	0.30		
117		246.36						1A,1B/.30	2A,2C/.47	0	0.77		
126		251.76						1A,1B/.29	2A,2C/.65	0	0.94		
135		262.56						1A,1B/.27	2A,2C/.96	0	1.13		High test cell and
144		273.36						1A,1B/.26	2A,2C/1.15	0	1.41		AIM nozz. pressures
153	63	186.15	6.0	930	3000	35.2	0°	0	0	0		No	Effect of altitude
161		192.45						1A,1B/.24	2A,2C/.56	0	0.80		
169		216.75						1A,1B/.24	2A,2C/.76	0	1.00		
177		249.15		470				0	0	0	0		
185		275.25		470				1A,1B/.26	2A,2C/.73	0	0.99		
193	64	156.11	6.0	750	3000	35.2	0°	0	0	0	0	No	Subsonic-supersonic
201		167.81						1B/.24	2A,2C/.77	0	1.01		transition
209		202.01						0	0	3A,3B/.85	0.85		
217		239.81						1B/.23	2A,2C/1.11	0	1.34		
225		261.41						1B/.24	0	3A,3B/.8	1.04		
233		293.81						1B/.26	2A,2C/.8	0	1.06		
241	65	164.03	6.0	750	3000	35.2	0°	0	0	0	0	No	Supersonic combustion
249		174.83						1A,1B/.23	0	0	0.23		with instrumentation rig,
257		180.23						1A,1B/.24	2A,2C/.34	0	0.58		gas sampling
265		196.43						1A,1B/.24	2A,2C/.59	0	0.83		
273		201.83						1A,1B/.24	2A,2C/.80	0	1.04		
281		218.03						1A,1B/.27	2A,2C/.76	0	1.03		
289		235.13						1A,1B/.25	2A,2C/.79	0	1.04		
297	69	177.00	6.0	750	3000	35.2	0°	0	0	0	0	No	Supersonic combustion
305		198.60						1A,1B/.22	0	0	0.22		with instrumentation rig,
313		212.10						1A,1B/.23	2A,2C/.48	0	0.48		gas sampling
321		226.50						1A,1B/.23	2A,2C/.59	0	0.82		
329		256.20						1A,1B/.22	2A,2C/.69	0	0.91		
337		265.20						1A,1B/.23	2A,2C/.79	0	1.02		
345	71	160.54	6.0	750	3000	35.2	3°	0	0	0	0	No	Angle of attack perform-
353		171.39						1A,1B/.22	0	0	0.22		ance
361		174.94						1A,1B/.22	2A,2C/.31	0	0.53		
369		193.84						1A,1B/.24	2A,2C/.59	0	0.83		
377		207.34						1A,1B/.24	2A,2C/.81	0	1.05		
385		248.74						0	2A,2C/1.33	0	1.33		
393		266.74						0	2A,2C/.87	0	0.87		
401		270.34						0	2A,2C/.87	0	0.87		
409		284.74						0	2A,2C/.66	0	0.66		
417		285.64						0	2A,2C/.66	0	0.66		

*Reference 11

Table 5. - Continued.

(c) Mach 7 component integration and engine performance results.

Page* No.	Reading Number	Time	M_o	P_{T_o}, psia	P_{T_o}, °R	X_{CL}, in.	α	Inj.1/ϕ_1	Inj.2/ϕ_2	Inj.3/ϕ_3	ϕ_T	Ignitors 1, 2, 3	Purpose & Remarks
54	88	236.40	7.25	1000	3160	36.6	0°	0	0	0	0	2	Exploratory run
62		245.40			3170			1A,1B/.30	0	0	0.30		
70		261.60			3250			1A,1B/.42	0	0	0.42		
78		269.70			3280			1A,1B/.55	0	0	0.55		
86		270.60			3270			1A,1B/.57	0	0	0.57		
94		271.50			3270			1A,1B/.58	0	0	0.58		
102		278.70			3270			1A,4/.16	2A,2C/.70	0	0.86		
111		285.90			3250			1A,4/.31	2A,2C/.60	0	0.91		
120		294.00			3200			1A,4/.28	2A,2C/.57	0	0.85		
129		299.40			3150			1A,4/.45	2A,2C/.46	0	0.91		
138	↓	305.70	↓	↓	3090	↓		1A,4/.49	2A,2C/.41	0	0.90	↓	↓
147	89	250.77	7.4	1000	1790	36.6	0°	0	0	0	0	No	Effect of low T_{TO}
155		272.37	7.25		3180			1A,1B/.32	2A,2C/.47	0	0.79	2	
164		283.17			3270			1A,1B/.34	2A,2C/.55	0	0.89		
173		290.37			3270			0	2A,2C/.75	0	0.75		
181		294.87			3310			0	2A,2C/.92	0	0.92		
189		304.77			3290			0	2A,2C/.59	0	0.59		
197		310.17	↓		3060			1A,1B/.32	2A,2C/.57	0	0.89		
206,232	**	316.47	7.30		2720			1A,1B/.29	2A,2C/.54	0	0.83		
215,241	**	327.27	7.34		2410			1A,1B/.28	2A,2C/.54	0	0.82		
224	↓	352.47	7.25	↓	3300	↓		1A,1B/.36	2A,2C/.57	0	0.93	↓	↓
249	90	197.22	7.25	1000	3000	36.6	0°	0	0	0	0	No	Optimization
257		206.22						1A,1B/.48	0	0	0.48	2	
265		212.52						1A,1B/.49	4/.05	0	0.54		
273		217.02						1A,1B/.48	1C,4/.34	0	0.82		
281		230.52						1A,1B/.26	1C,4/.51	0	0.77		
289		235.02						1A,1B/.79	1C,4/1.19	0	1.98		Inlet unstarted
297		246.72						1A/.51	0	0	0.51		
305	↓	247.62	↓	↓	↓	↓		1A/.55	0	0	0.55	↓	↓
313	91	175.65	7.25	1000	3100	36.6	3°	1A,1B/.39	0	0	0.39	2	Angle of attack
321		180.15						1A,1B/.47	0	0	0.47	2	
329		186.45						0	0	0	0	No	
337		190.05						1A,1B/.51	4/.13	0	0.64	2	
345		203.55						1A,1B/.52	0	0	0.52		
353		216.15						1B/.27	4,2C/.34	0	0.61		
361		224.25						1B/.28	4,2C/.50	0	0.78		
369		226.95						1B/.28	4,2C/.45	0	0.73		
377		229.65						1B/.33	4,2C/.39	0	0.72		
385	↓	235.95	↓	↓	↓	↓		1B/.29	2C/.41	0	0.70	↓	↓
393	92	186.87	7.38	1000	2050	36.6	0°	0	0	0	0	No	Supersonic combustion with instrumentation rig, gas sampling and O_2 content effect
401		205.77	7.29		2850			1A,1B/.48	4,2C/.34	0	0.72	2	
409		227.37						1A,1B/.50	4,2C/.43	0	0.93		
417		248.07	↓		↓			1B/.33	4,2C/.58	0	0.91		
425		290.37	7.25		3000			1A,1b/.47	4,2C/.55	0	1.12		
433	↓	312.87	7.25	↓	3000	↓		1A,1B/.36	4,2C/.49	0	0.85	↓	↓

*Herein

** Recomputations were made with surface pressure substitutions

Table 5. - Continued.

(d) Mach 5 component integration and engine performance results.

Page* No.	Reading Number	Time	M_o	P_{T_o}, psia	T_{T_o}, °R	X_{CL}, in.	α	Inj.1/ϕ_1	Inj.2/ϕ_2	Inj.3/ϕ_3	ϕ_T	Ignitors 1, 2, 3	Purpose & Remarks
54	93	134.03	5.1	420	2100	35.2	0°	0	0	0	0	No	No fuel injection
62		142.13						0	2A/.29	0	0.29	2	2nd stage only
70		150.23						0	2A/.31	3A,3B/.25	0.56		Subsonic combustion
78		158.33						0	0	3A,3B/.60	0.60		and O_2 content effect
86		162.83						0	0	3A,3B/.71	0.71		
94		174.53						0	0	3A,3B/.49	0.49		
102		182.63						0	0	3A,3B/.35	0.35		
110	94	134.14	5.1	420	2230	35.2	0°	0	0	0	0	No	Subsonic combustion
118		140.44						0	2A/.49	0	0.49	2	
126		150.34						0	2A/.49	3A,3B/.47	0.96		
134		157.54						0	0	3A,3B/1.03	1.03		
142		163.84						0	0	3A,3B/1.19	1.19		
150		180.04						0	0	3A,3B/.59	0.59		
158		214.24		300	2940			0	2A/.53	0	0.53		Effect of T_{TO}
166		215.14						0	2A/.53	0	0.53		High test cell and
174		218.74						0	2A/.54	3A,3B/.5	1.04		AIM nozz. pressures
183		231.34						1A,1B/.15	0	0	0.15		
191		233.14						1A,1B/.25	0	0	0.25		
199		234.04						1A,1B/.27	0	0	0.27		
207	95	129.55	5.2	300	2430	35.2	0°	0	0	0	0	No	Supersonic combustion
215		140.35	5.1		3080			1A,1B/.16	0	0	0.16	2	
223		160.15			2940			1A,1B/.18	2A,2C/.68	0	0.86		
231		169.15						1A,1B/.19	2A,2C/.83	0	1.02		
239		189.85						0	2A,2C/.99	0	0.99		
247		196.15						0	2A,2C/.86	0	0.86		
255		204.25						0	2A,2C/.71	0	0.71		
263		211.45						0	2A,2C/.58	0	0.58		
271		217.75						0	2A,2C/.70	0	0.70		
279		228.55						1A,1B/.22	2A,2C/.63	0	0.85		
287		241.15						0	0	0	0	No	
295		252.85		320	2800			1A,1B/.18	2A,2C/.70	0	0.88	2	
303		289.75		310	2890			0	2A,2C/.86	0	0.86		AIM nozz. press. high
311		310.45		420	2230			0	2A,2C/.66	0	0.66		Effect of T_{TO}
319		317.65		420	2230			0	2A,2C/.51	0	0.51		
327	96	134.44	5.1	420	2230	35.2	3°	0	0	0	0	No	Angle of attack perform-
336		141.64						0	2A/.38	0	0.38	2	ance
344		150.64						0	2A/.45	3A,3B/.38	0.83		
352		165.94						0	0	3A,3B/.87	0.87		
360		172.24						0	0	3A,3B/.59	0.59		
368		180.34						0	0	3A,3B/.43	0.43		
376		244.24		300	2925			0	0	0	0	No	
384		264.04		420	2230			1A,1B/.10	0	0	0.10	2	Fuel flow meas.
392		274.84						1A,1B/.21	0	0	0.21	2	malfunction; 1A
400		275.74						1A,1B/.20	0	0	0.20	2	flow only indicated
408		294.64						0	0	0	0	No	
417		313.54						0	0	3A,3B/.77	0.77	2	High test cell and AIM nozz. pressures

*Reference 12

Table 5. - Concluded.

(d) Concluded.

Page* No.	Reading Number	Time	M_o	P_{T_o}, psia	P_{T_o}, °R	X_{CL}, in.	α	Inj.1/ϕ_1	Inj.2/ϕ_2	Inj.3/ϕ_3	ϕ_T	Ignitors 1, 2, 3	Purpose & Remarks
425	97	135.71	5.1	210	2100	35.2	0°	0	0	0	0	No	Subsonic combustion with
433		156.41			2200			0	2A/.51	3A,3B/.49	0.90	2	instrumentation rig and
442		160.91						0	2A/.32	3A,3B/.24	0.56		gas sampling probes
451		182.51						0	0	3A,3B/.50	0.50		
459		201.41						0	0	3A,3B/.67	0.67		
467		224.81						0	0	3A,3B/.86	0.86		
476		252.71		420				0	2A/.50	3A,3B/.43	0.93		
485		271.61						0	2A/.43	3A,3B/.34	0.77		
494		295.91						0	0	3A,3B/.74	0.74		
502		317.51						0	0	3A,3B/.90	0.90		
510		322.01						0	0	3A,3B/1.07	1.07		High test cell and
518		325.61						0	0	3A,3B/1.08	1.08		AIM nozz. pressures

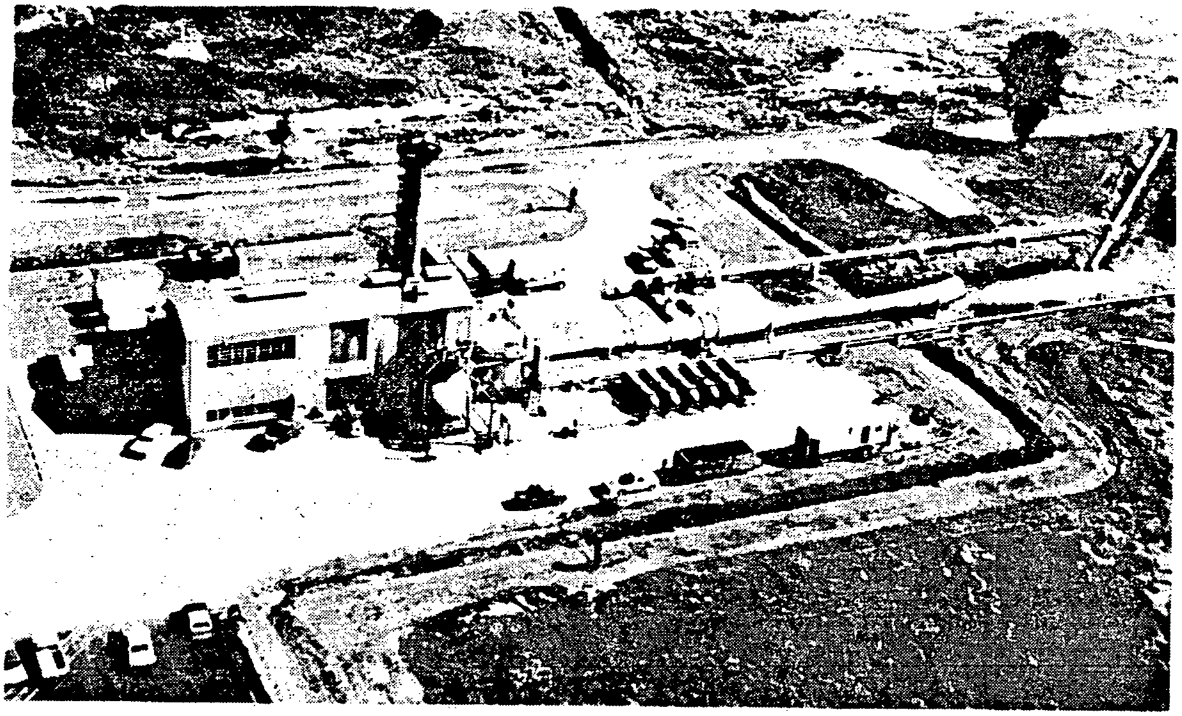
*Reference 12

Table 6. - Instrumentation code-outs for HRE/AIM performance computations.

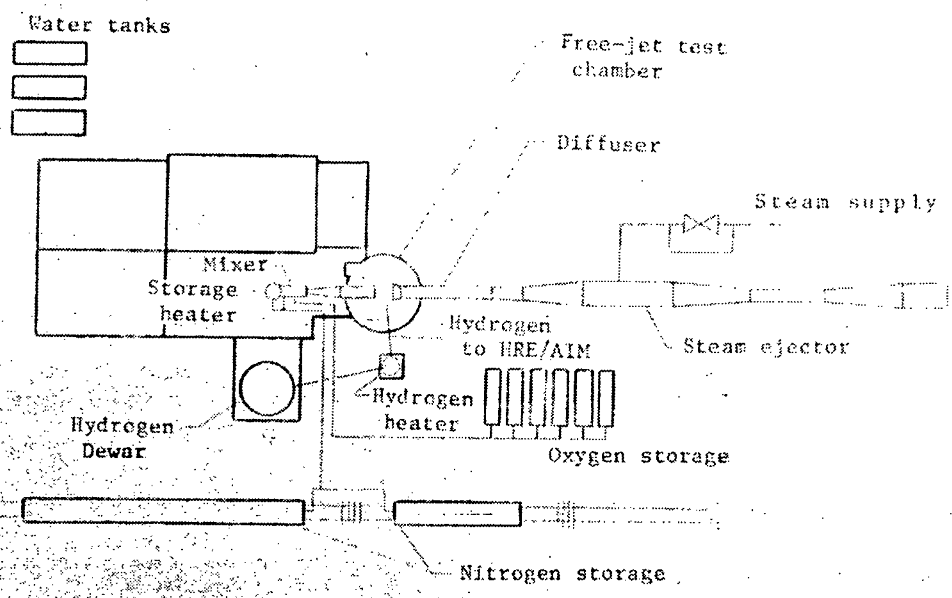
```
C033    0000000 PROCDEF C033
C033    0000100 KDOSEL  60, 65, 67, 83, 84, 85, 86, 87, 88, 91, 92,123,124,148,154,156,158,160,162,164
C033    0000200 KDOSEL 165,166,168,171,172,174,175,176,180,181,182,183,185,191,206
C033    0000300 KDOSEL 208,212,226,228,230,231,236,239,240,241,244,248,249,290,292
C033    0000400 KDOSEL 305,306,307,308,309,310,311,312,313,314,315,316,317,318,319
C033    0000500 KDOSEL 320,321,322,323,324,325,326,327,328,329,330,331,332,333,334
C033    0000600 KDOSEL 335,336,337,338
C033    0000700 KDOSEL 399
C033    0000800 QUALIFY AINLETT
C033    0000900 AT 3(2);SET VAL(11,INITRO)=.73448,VAL(11,IOXY)=.26552;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C033    0001000 QUALIFY STAPRS
C033    0001100 AT 320(2);DISPLAY 'INPUT PSI(1,1), THEN TYPE GO'
C034    0000000 PROCDEF C034
C034    0000100 KDOSEL  60, 65, 67, 84, 85, 86, 87, 88, 92,123,124,148,154,156,158,160,162,164
C034    0000200 KDOSEL 166,168,171,172,174,176,180,181,182,183,186,191,195,199,201
C034    0000300 KDOSEL 206,208,212,226,228,230,231,236,240,241,244,248,249,252,290,292
C034    0000400 KDOSEL 305,306,307,308,309,310,311,312,313,314,315,316,317,318,319
C034    0000500 KDOSEL 320,321,322,323,324,325,326,327,328,329,330,331,332,334,335
C034    0000600 KDOSEL 336,337,338
C034    0000700 KDOSEL 399
C034    0000800 QUALIFY AINLETT
C034    0000900 AT 3(2);SET VAL(11,INITRO)=.73448,VAL(11,IOXY)=.26552;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C036    0000000 PROCDEF C036
C036    0000100 KDOSEL  60, 65, 66, 67,123,124,144,154,156,158,160,162,164,166,168,171,172,174,181
C036    0000200 KDOSEL 182,186,191,195,199,206,208,218,228,230,231,236,240,241,244
C036    0000300 KDOSEL 248,249,252,289,290,292,294,305,310,312,313,314,315,320
C036    0000400 KDOSEL 399
C036    0000500 QUALIFY AINLETT
C036    0000600 AT 3(2);SET VAL(11,INITRO)=.73448,VAL(11,IOXY)=.26552;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C038    0000000 PROCDEF C038
C038    0000100 KDOSEL  60, 65, 66, 67,123,124,144,154,168,174,181,182,186,191,195,199,201,206,228
C038    0000200 KDOSEL 230,231,236,240,241,244,248,249,252,290,292,294,305,310,312,313
C038    0000300 KDOSEL 314,315,319,320
C038    0000400 KDOSEL 399
C038    0000500 QUALIFY AINLETT
C038    0000600 AT 3(2);SET VAL(11,INITRO)=.73448,VAL(11,IOXY)=.26552;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C038    0000700 QUALIFY STAPRS
C038    0000800 AT 320(2);DISPLAY 'INPUT PSI(1,1), THEN TYPE GO'
C052    0000000 PROCDEF C052
C052    0000100 KDOSEL  65, 66, 67,124,137,139,141,158,165,168,178,181,182,195,199,200,201,206,208
C052    0000200 KDOSEL 226,230,249,252,289,290,292,294,305,313,314,315,320,329,399
C052    0000400 QUALIFY AINLETT
C052    0000500 AT 3(2);SET VAL(11,INITRO)=.73448,VAL(11,IOXY)=.26552;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C054    0000000 PROCDEF C054
C054    0000100 KDOSEL  65, 66, 67,124,137,139,141,156,165,168,178,181,182,195,199,200,201,206,226,230
C054    0000200 KDOSEL 249,252,268,289,290,292,294,305,313,314,315,319,320,329,399
C054    0000400 QUALIFY AINLETT
C054    0000500 AT 3(2);SET VAL(11,INITRO)=.73448,VAL(11,IOXY)=.26552;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C057    0000000 PROCDEF C057
C057    0000100 KDOSEL  62, 65, 66, 74,124,137,139,158,160,168,172,179,181,182,183,187,190,195,199
C057    0000200 KDOSEL 201,206,226,230,248,249,252,289,290,292,294,305,313,314,315,320,321
C057    0000300 KDOSEL 329
C057    0000400 KDOSEL 399
C057    0000500 QUALIFY AINLETT
C057    0000600 AT 3(2);SET VAL(11,INITRO)=.73613,VAL(11,IOXY)=.26387;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C060    0000000 PROCDEF C060
C060    0000100 KDOSEL  62, 65, 66, 74,124,137,139,158,160,168,172,179,181,182,183,187,190,195,199
C060    0000200 KDOSEL 201,206,226,230,248,249,252,289,290,292,294,305,313,314,315,319,320
C060    0000300 KDOSEL 321,329
C060    0000400 KDOSEL 399
C060    0000500 QUALIFY AINLETT
C060    0000600 AT 3(2);SET VAL(11,INITRO)=.73613,VAL(11,IOXY)=.26387;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C061    0000000 PROCDEF C061
C061    0000100 KDOSEL  62, 65, 66, 74,124,137,139,158,160,168,172,179,181,182,183,187,190,195,199
C061    0000200 KDOSEL 201,206,226,230,248,249,252,289,290,292,294,305,313,314,315,319,320
C061    0000300 KDOSEL 321,329
C061    0000400 KDOSEL 399
C061    0000500 QUALIFY AINLETT
C061    0000600 AT 3(2);SET VAL(11,INITRO)=.73928,VAL(11,IOXY)=.26072;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C063    0000000 PROCDEF C063
C063    0000100 KDOSEL  62, 65, 66, 74,124,137,139,158,160,168,172,179,181,182,183,187,190,195,197
C063    0000200 KDOSEL 199,201,206,226,230,248,249,252,289,290,292,294,305,313,314,315,319
C063    0000300 KDOSEL 320,321,329
C063    0000400 KDOSEL 399
C063    0000500 QUALIFY AINLETT
C063    0000600 AT 3(2);SET VAL(11,INITRO)=.7724,VAL(11,IOXY)=.2276;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C064    0000000 PROCDEF C064
C064    0000050 KDOSEL  62, 65, 66, 74
C064    0000100 KDOSEL 124,137,139,148,158,160,168,172,179,181,182,183,187,190,195
C064    0000200 KDOSEL 197,199,201,206,226,230,248,249,252,289,290,292,294,305,313,314,315
C064    0000300 KDOSEL 319,320,321,329,399
C064    0000400 QUALIFY AINLETT
C064    0000500 AT 3(2);SET VAL(11,INITRO)=.76751,VAL(11,IOXY)=.23249;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C065    0000000 PROCDEF C065
C065    0000100 KDOSEL  62, 65, 66, 74,137,139,181,182,183,187,188,190,195,197,199,201,206,226,230
C065    0000200 KDOSEL 248,252,289,290,292,294,305,313,314,315,320,321,329,399
C065    0000400 QUALIFY AINLETT
C065    0000500 AT 3(2);SET VAL(11,INITRO)=.76751,VAL(11,IOXY)=.23249;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C069    0000000 PROCDEF C069
C069    0000100 KDOSEL  62, 65, 66, 74,137,139,181,182,183,187,190,195,197,199,201,206,226,230,248,252
C069    0000200 KDOSEL 289,290,292,294,305,313,314,315,320,321,322,329,399
C069    0000400 QUALIFY AINLETT
C069    0000500 AT 3(2);SET VAL(11,INITRO)=.76479,VAL(11,IOXY)=.23521;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
```

Table 6. - Concluded.

```
C071     0000000 PROCDEF C071
C071     0000100 KDOSEL  53, 62, 65, 66, 74,124,137,139,158,160,172,179,181,182,183,187,190,195,197,199
C071     0000200 KDOSEL 201,206,226,230,248,249,252,289,290,292,294,305,313,314,315,320,321,322,329,399
C071     0000500 QUALIFY AINLETT
C071     0000600 AT 3(2);SET VAL(11,INITRO)=.75452,VAL(11,IOXY)=.24548;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C088     0000000 PROCDEF C088
C088     0000100 KDOSEL  19, 22, 23, 54, 55, 60, 62, 64, 67, 74, 95,124,137,139,157,158,160
C088     0000200 KDOSEL 162,165,166,169,170,171,172,173,174,175,176,177,178,179,181
C088     0000300 KDOSEL 182,183,187,190,195,197,199,206,226,227,230,235,241,248,249
C088     0000400 KDOSEL 250,252,278,289,290,292,294,305,313,314,315,320,321,329,348
C088     0000500 KDOSEL 353,366,367,368,369,370,374,375,378,379,382,388,394,395,399
C088     0000800 QUALIFY AINLETT
C088     0000900 AT 3(2);SET VAL(11,INITRO)=.75328,VAL(11,IOXY)=.24672;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C088     0001000 QUALIFY ANOZ
C088     0001100 AT 360(3);SET DRAGEX=-0.5*Q0AC;DISPLAY DRAGEX,DRAGEX*PSIATM,'DRAGEX = -0.5*Q0*AC'
C088     0001200 QUALIFY CONVTA
C088     0001300 AT 0;SET MV(65)=MV(53),MV(66)=MV(53);DISPLAY MV(53),MV(65),MV(66)
C088     0001400 SETPS 123,0.690
C089     0000000 PROCDEF C089
C089     0000100 KDOSEL  54, 55, 60, 62, 64, 67, 74, 95,124,137,139,157,158,160,165,166,169
C089     0000200 KDOSEL 172,175,176,179,181,182,183,187,190,195,197,199
C089     0000300 KDOSEL 210,223,224,226,227,230,235,248,249,250,252,289,290,292,294
C089     0000400 KDOSEL 305,313,320,321,329,399
C089     0000600 QUALIFY AINLETT
C089     0000700 AT 3(2);SET VAL(11,INITRO)=.75148,VAL(11,IOXY)=.24852;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C089     0000800 QUALIFY CONVTA
C089     0000900 AT 0;SET MV(65)=MV(53),MV(66)=MV(53);DISPLAY MV(53),MV(65),MV(66)
C089     0001000 SETPS 123,0.690
C090     0000000 PROCDEF C090
C090     0000100 KDOSEL  54, 55, 60, 62, 64, 67, 74,124,137,139,157,158,160,165,172,175,176
C090     0000200 KDOSEL 179,181,182,183,187,190,195,197,199,202,203,206,207
C090     0000300 KDOSEL 208,210,215,224,226,227,230,235,248,249,250,252,273,289,290
C090     0000400 KDOSEL 292,294,305,313,314,315,320,321,329
C090     0000500 KDOSEL 399
C090     0000600 QUALIFY AINLETT
C090     0000700 AT 3(2);SET VAL(11,INITRO)=.7389,VAL(11,IOXY)=.2611;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C090     0000800 QUALIFY CONVTA
C090     0000900 AT 0;SET MV(65)=MV(53),MV(66)=MV(53);DISPLAY MV(53),MV(65),MV(66)
C091     0000000 PROCDEF C091
C091     0000100 KDOSEL  54, 55, 60, 62, 64, 67, 74, 96,124,137,139,148,157,158,160,165,172
C091     0000200 KDOSEL 175,176,179,181,182,183,187,190,195,197,199,206,208
C091     0000300 KDOSEL 226,227,230,235,248,249,250,252,289,290,292,294,305,313
C091     0000400 KDOSEL 314,315,320,321,329,399
C091     0000600 QUALIFY AINLETT
C091     0000700 AT 3(2);SET VAL(11,INITRO)=.7389,VAL(11,IOXY)=.2611;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C091     0000800 QUALIFY ENGPGM
C091     0000900 SET ALPHA=3.0;DISPLAY ALPHA
C091     0001000 QUALIFY CONVTA
C091     0001100 AT 0;SET MV(65)=MV(61),MV(66)=MV(61);DISPLAY MV(61),MV(65),MV(66)
C091     0001200 SETPS 123,0.690
C092     0000000 PROCDEF C092
C092     0000100 KDOSEL  54, 55, 60, 62, 64, 67, 74,137,139,148,175,176,181,182,183,187,190,195
C092     0000200 KDOSEL 197,199,206,208,226,227,230,232,248,252,265,266
C092     0000300 KDOSEL 267,268,270,271,272,289,290,292,294,305
C092     0000400 KDOSEL 313,314,315,320,321,329,399
C092     0000500 QUALIFY ANOZ
C092     0000600 AT 360(3);SET DRAGEX=-0.5*Q0AC;DISPLAY DRAGEX,DRAGEX*PSIATM,'DRAGEX = -0.5*Q0*AC'
C092     0000700 QUALIFY CONVTA
C092     0000800 AT 0;SET MV(65)=MV(53),MV(66)=MV(53);DISPLAY MV(53),MV(65),MV(66)
C093     0000000 PROCDEF C093
C093     0000100 COMACH5
C093     0000200 KDOSEL 96
C093     0000500 QUALIFY AINLETT
C093     0000600 AT 3(2);SET VAL(11,INITRO)=.655704,VAL(11,IOXY)=.344296;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C093     0000700 TUNNOPT 3
C094     0000000 PROCDEF C094
C094     0000100 COMACH5
C094     0000600 QUALIFY AINLETT
C094     0000700 AT 3(2);SET VAL(11,INITRO)=.76284,VAL(11,IOXY)=.23716;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C094     0000800 TUNNOPT 3
C095     0000000 PROCDEF C095
C095     0000100 COMACH5
C095     0000600 QUALIFY AINLETT
C095     0000700 AT 3(2);SET VAL(11,INITRO)=.7486,VAL(11,IOXY)=.25138;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C095     0000800 TUNNOPT 3
C096     0000000 PROCDEF C096
C096     0000100 COMACH5
C096     0000600 QUALIFY AINLETT
C096     0000700 AT 3(2);SET VAL(11,INITRO)=.76488,VAL(11,IOXY)=.23512;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C096     0000800 TUNNOPT 3
C097     0000000 PROCDEF C097
C097     0000100 KDOSEL  54, 55, 60, 62, 64, 65, 66, 67, 74,124,137,139,181,182,183,187,190,195,197
C097     0000200 KDOSEL 199,226,230,248,252,280,289,290,292,294,305,313,314,315,320,321,329,399
C097     0000500 QUALIFY AINLETT
C097     0000600 AT 3(2);SET VAL(11,INITRO)=.77086,VAL(11,IOXY)=.22914;DISPLAY VAL(11,INITRO),VAL(11,IOXY)
C097     0000700 QUALIFY ANOZ
C097     0000800 AT 360(3);SET DRAGEX=-0.5*Q0AC;DISPLAY DRAGEX,DRAGEX*PSIATM,'DRAGEX = -0.5*Q0*AC'
C097     0000900 TUNNOPT 3
C097     0001000 QUALIFY ACMBSTR
C097     0001100 AT 350(3);SET XCTP=XCT;DISPLAY XSLE,XCT,XCTP,XSTE,'SUBSONIC COMBUSTION'
COMACH5  0000000 PROCDEF COMACH5
COMACH5  0000100 KDOSEL  54, 55, 60, 62, 64, 65, 66, 67, 74,124,137,139,157,158,160,162,165,172,176,179
COMACH5  0000200 KDOSEL 181,182,183,187,190,195,197,199,206,226,230,248,249,252,280,289,290,292,294,305
COMACH5  0000300 KDOSEL 313,314,315,320,321,329,399
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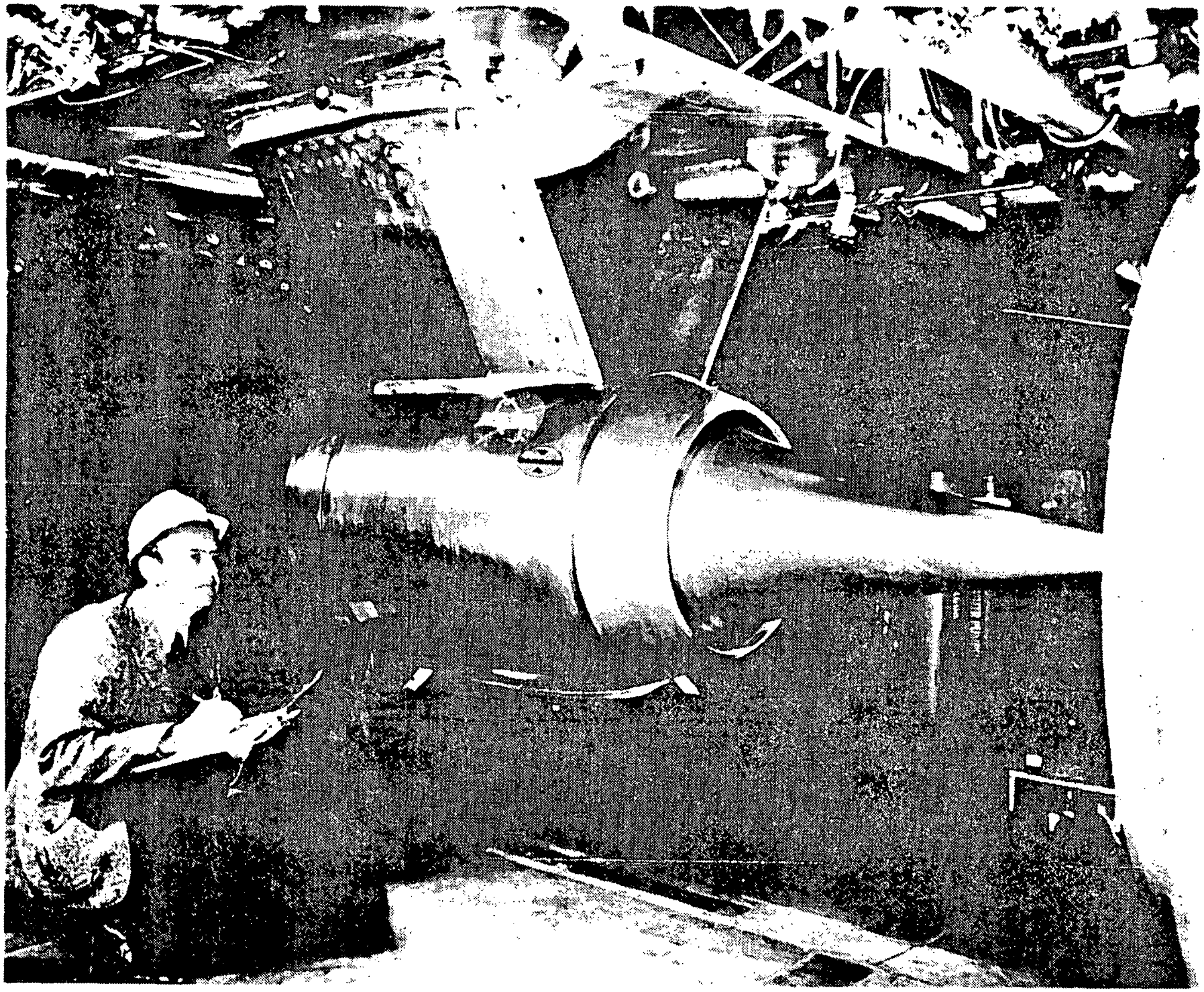


(a) Hypersonic Tunnel Facility (HTF).



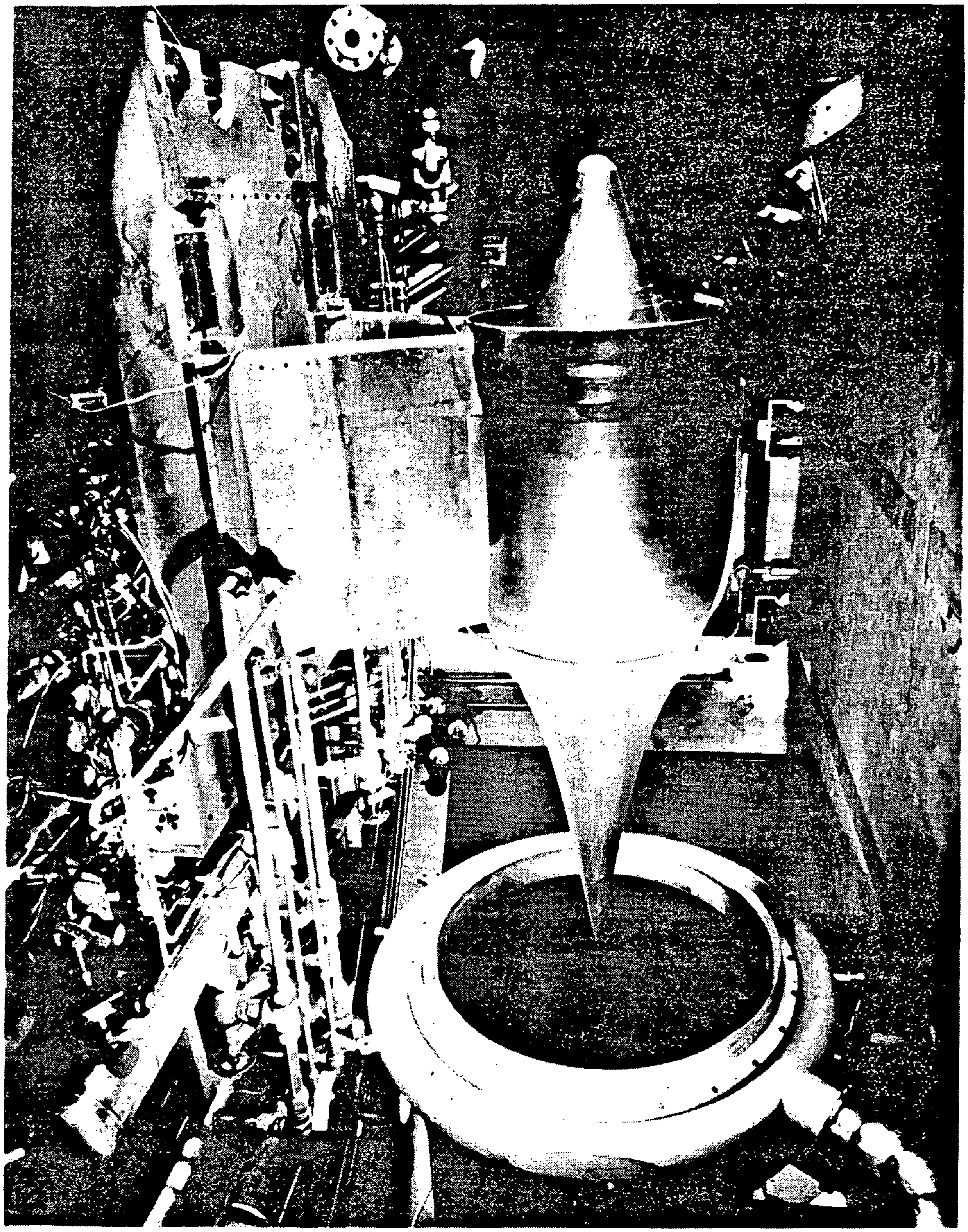
(b) Schematic layout of the NASA - Lewis - Plum Brook Hypersonic Tunnel Facility(HTF).

Figure 1. - NASA - Lewis Research Center's Plum Brook Station Hypersonic Tunnel Facility (HTF) and the Hypersonic Research Engine/ Aerothermodynamic Integration Model (HRE/AIM) installation.

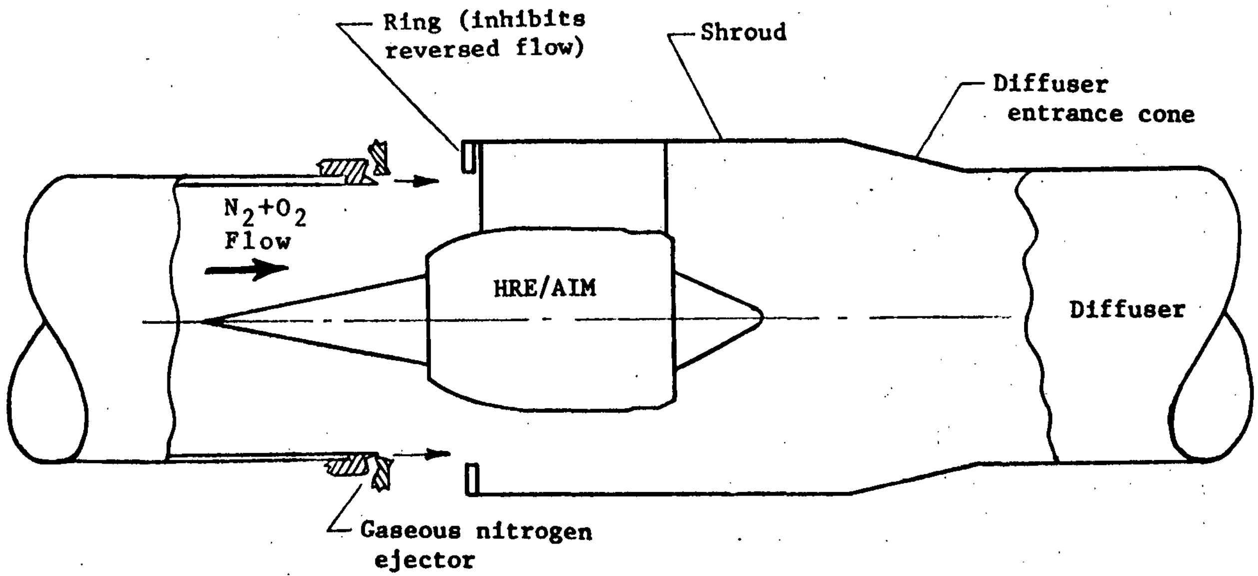


(c) HRE/AIM partically installed: pretest.

Figure 1. - Continued.



(d) HRE/AIM partically installed; Mach 5, 6, and 7 post test.



(e) Schematic of HRE/AIM test section located in the free-jet test chamber of the HTF.

Figure 1. - Concluded.

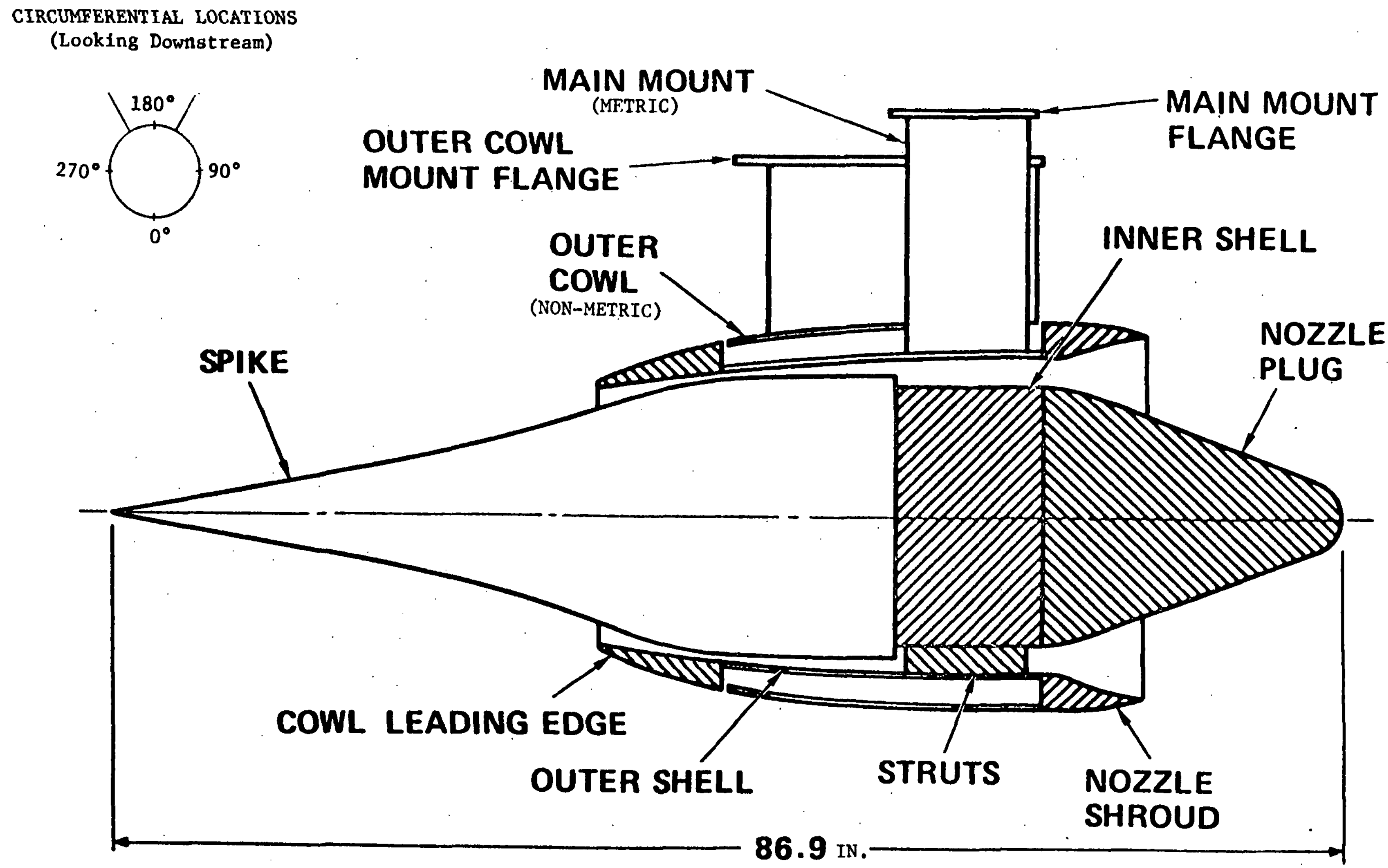
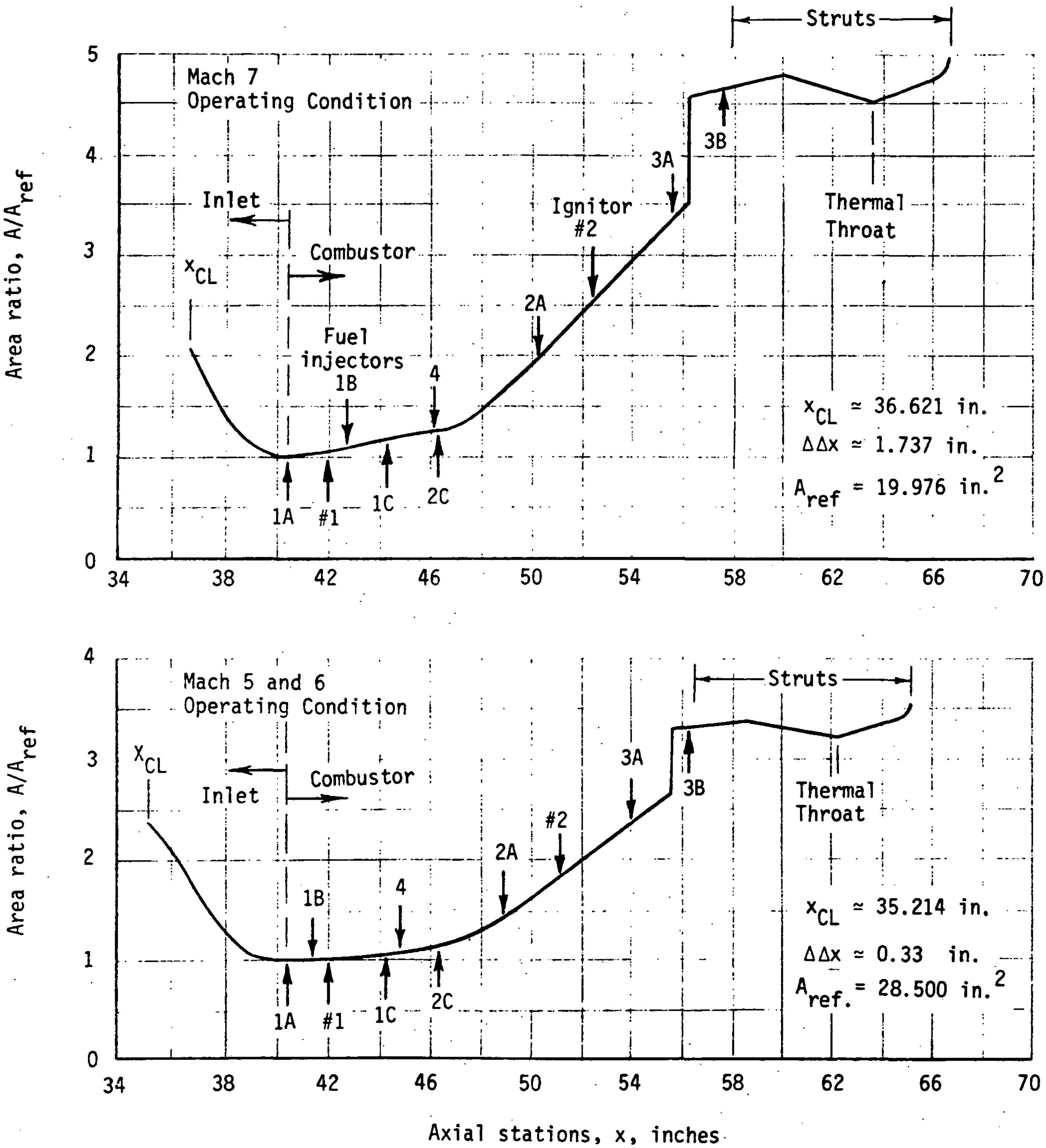


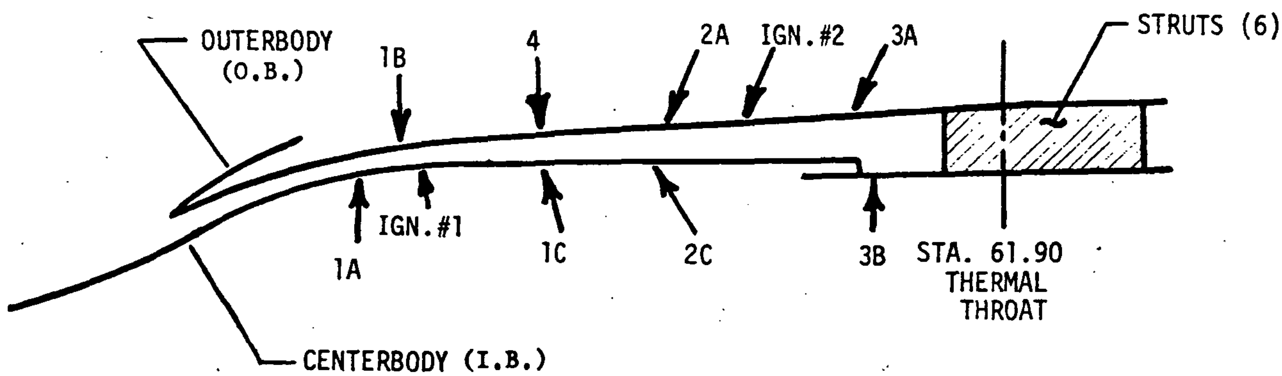
Figure 2. - General Configuration of the AIM



(a) Combustor area ratio distributions

Figure 3. - HRE/AIM combustor information.

COMBUSTOR CONFIGURATION



INJECTOR PARAMETERS
(Mach 6 position, x_{CL} = 34.884 in.)

Injector	Number of Injectors	Diameter, in.	Injection Angle[a], deg.	S/d	x, in.	Location
1A	37	0.119	90	13.1	40.5	I.B.
1B	37	0.119	90	13.9	41.25	O.B.
1C	37	0.119	106	13.5	44.5	I.B.
4	37	0.119	90	14.2	44.5	O.B.
2A	60	0.095	67	11.4	48.5	O.B.
2C	60	0.095	119	10.6	46.5	I.B.
3A	114	0.090	65	7.0	53.75	O.B.
3B	102	0.095	90	6.3	55.9	I.B.

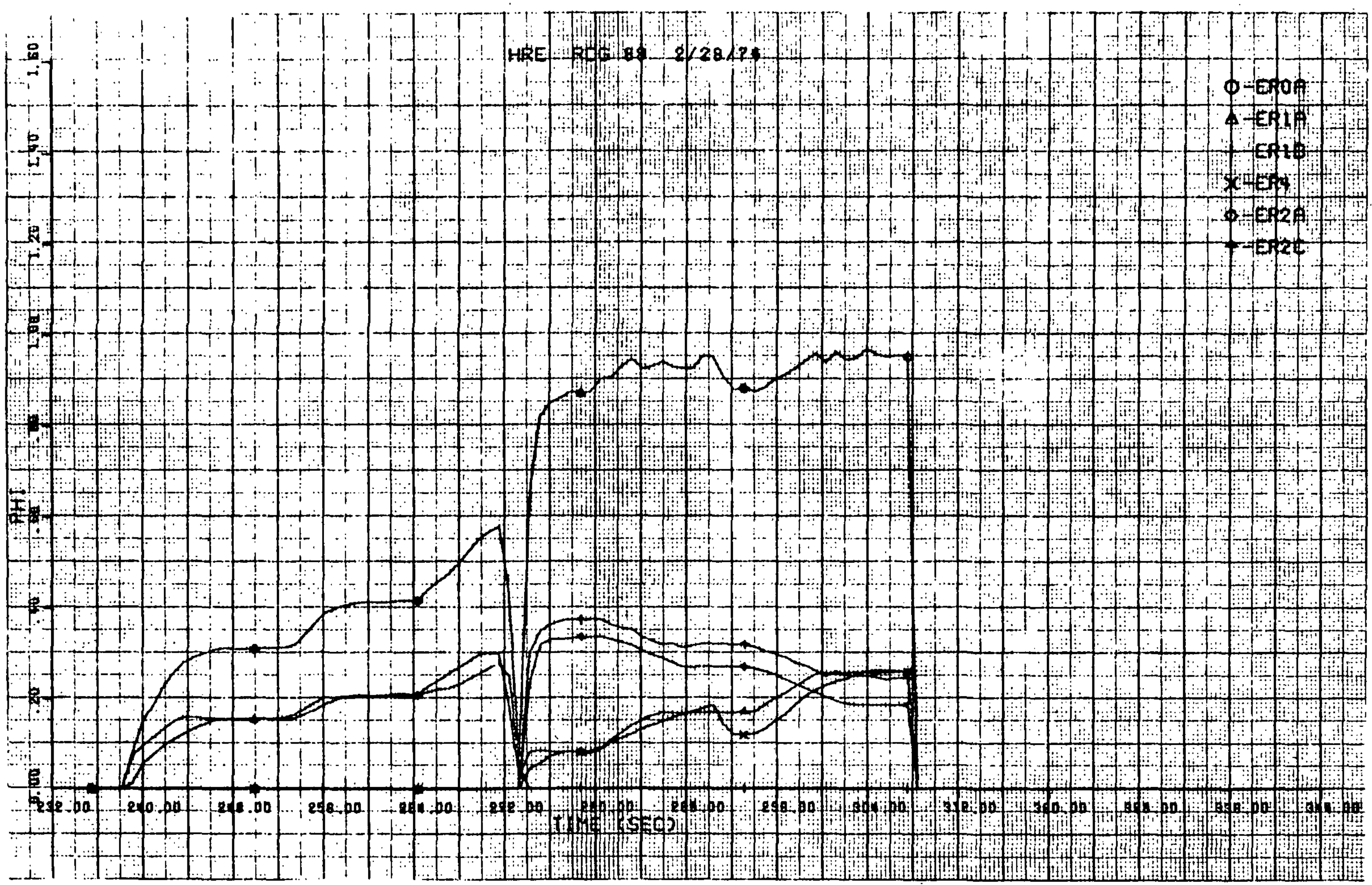
IGNITOR PARAMETERS

Ignitor	x, in.	Circumferential locations						Injection Angle[a], deg.	Location
1[c]	42.00	55	110	165	230	290	350	94.5	I.B.
2	50.98	40	100	-	220	240	280	60.0[b]	O.B.

a. With respect to AIM centerline.
b. Also looking upstream, ignitors #2 are inclined 30° clockwise.
c. Plug welded prior to reading 57.

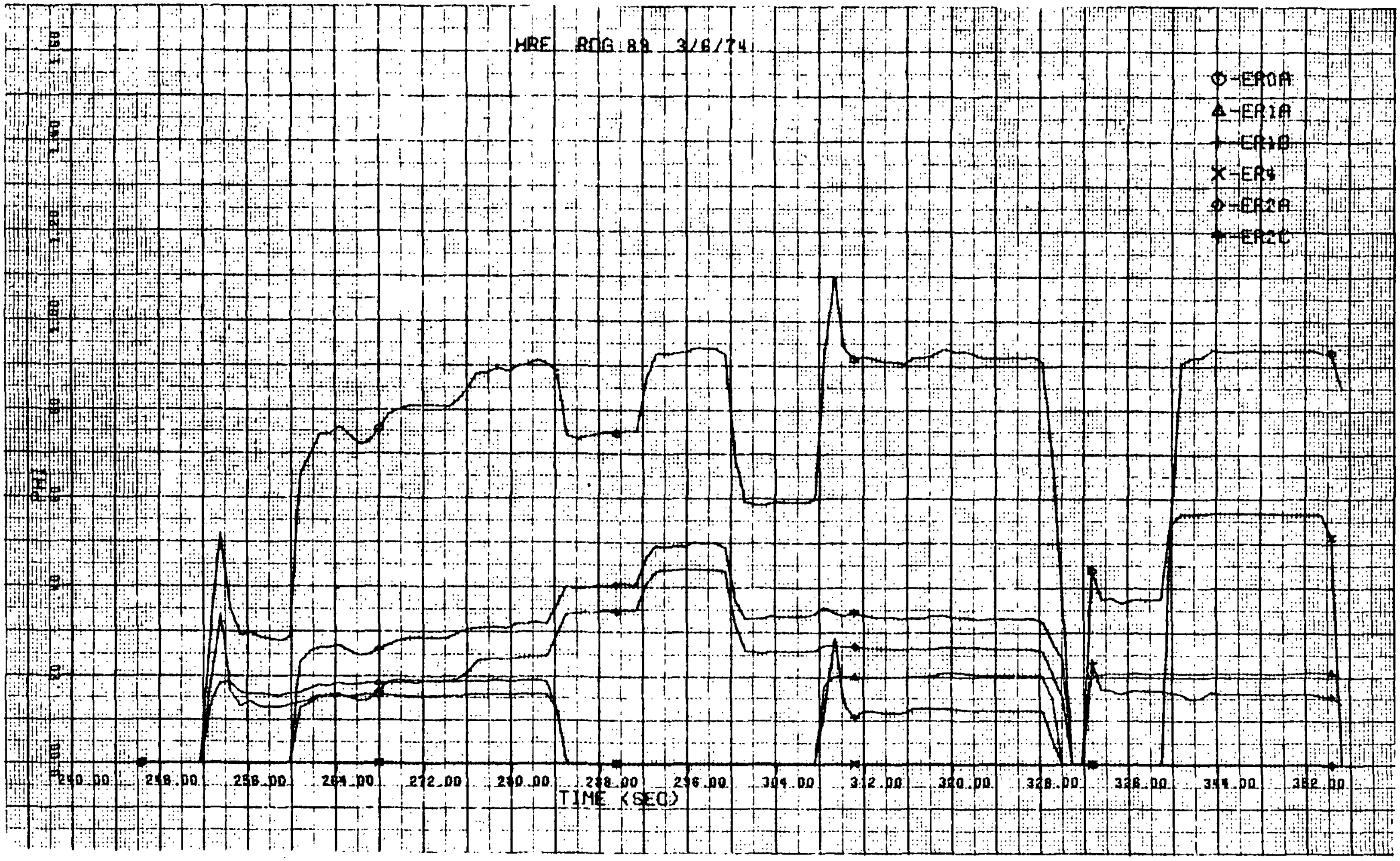
(b) Combustor configuration and parameters.

Figure 3. - Concluded.



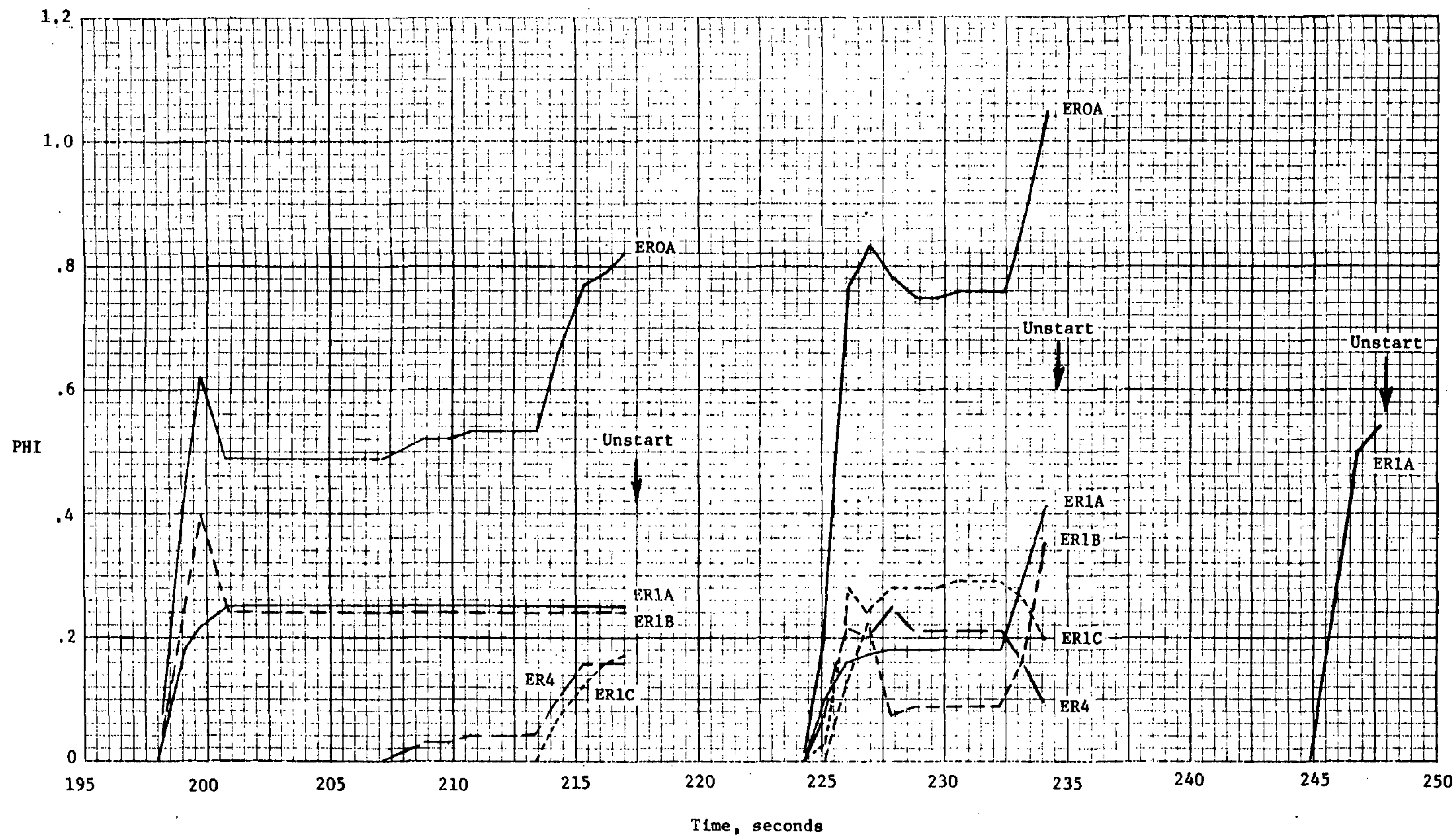
(a) Reading 88 - Measured Equivalence Ratio, ϕ

Figure 4. - HRE/AIM fuel equivalence ratio; Mach 7 component integration and performance results.



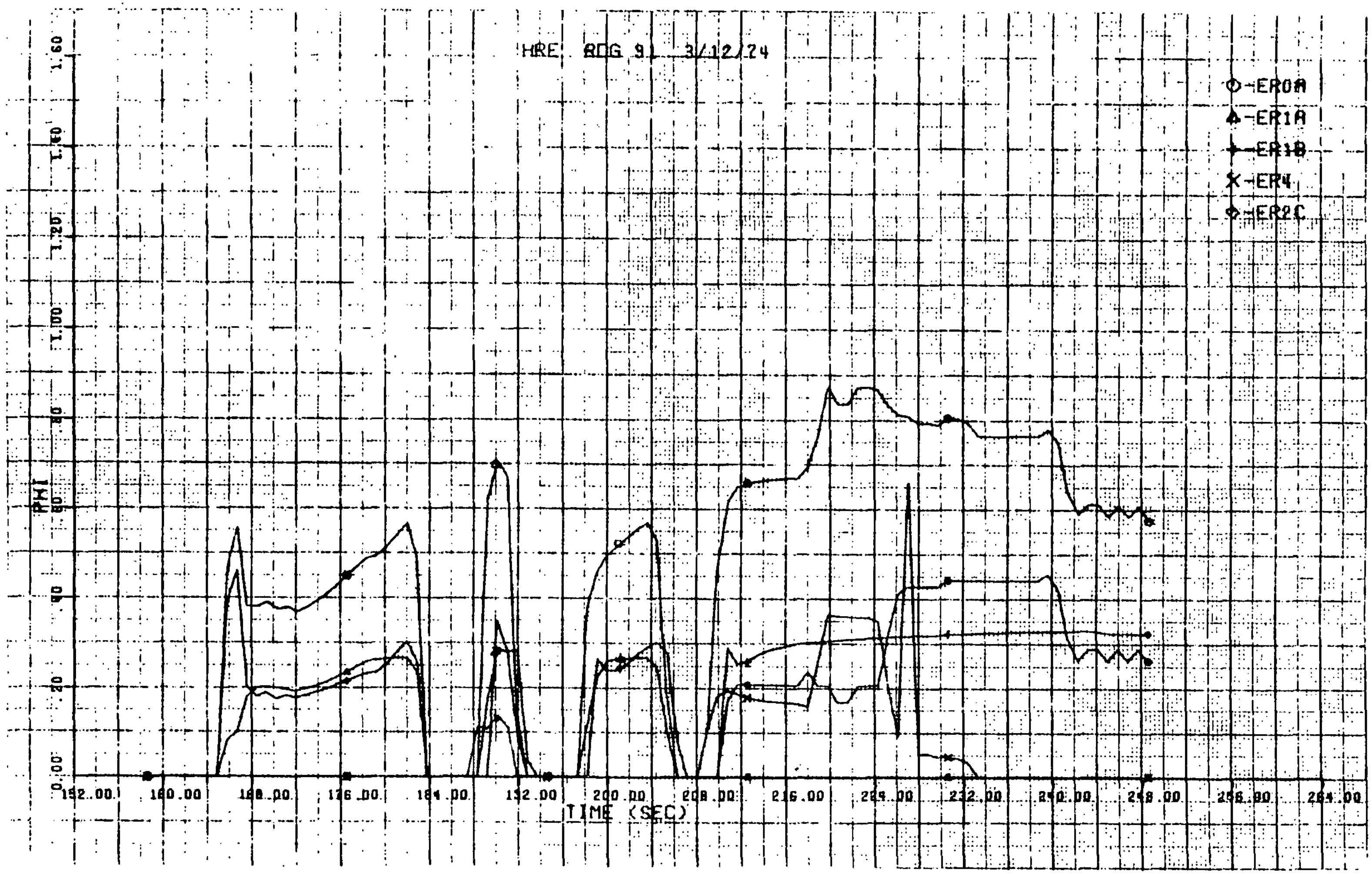
(b) Reading 89 - Measured Equivalence Ratio, ϕ

Figure 4. - Continued.



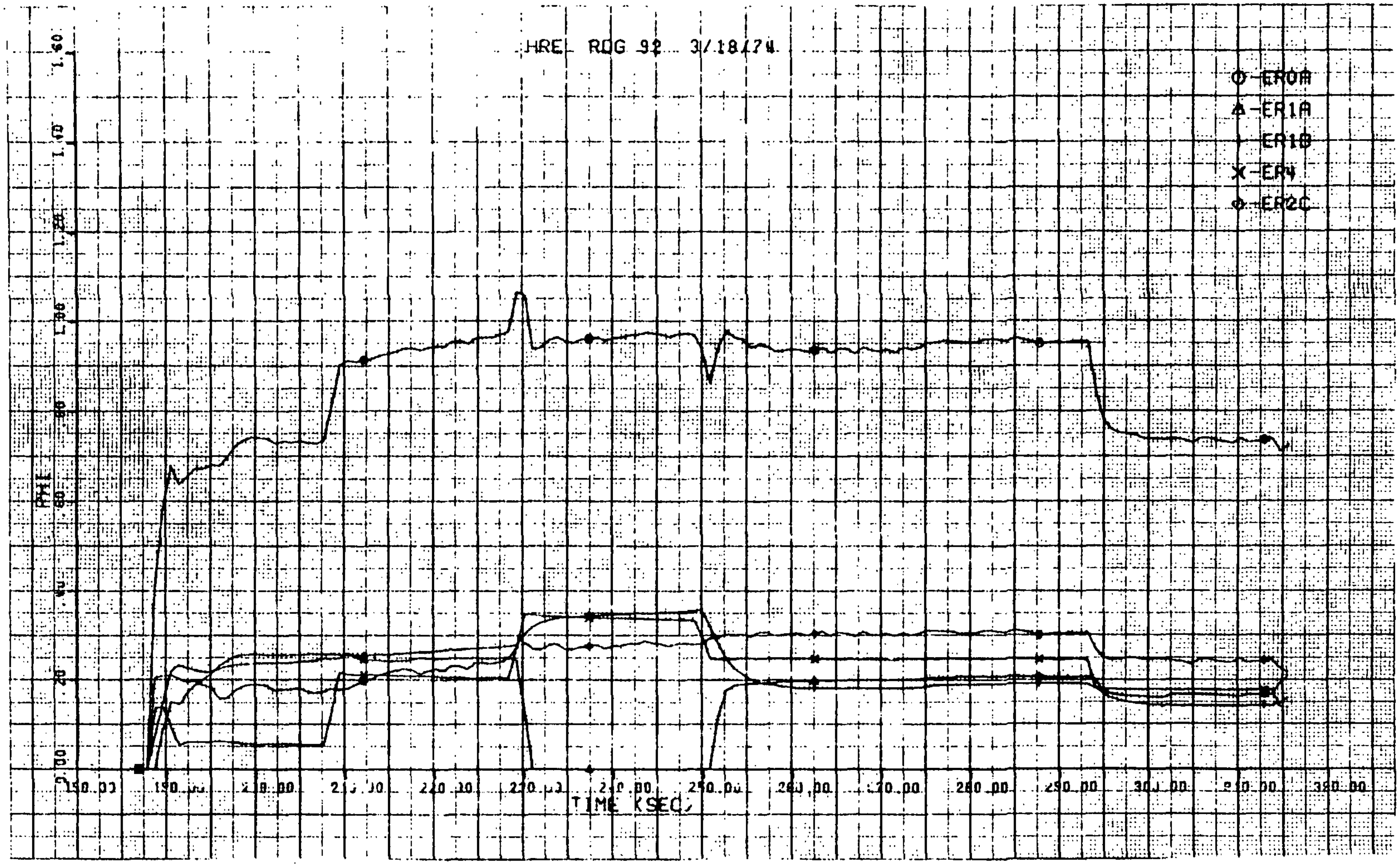
(c) Reading 90 - Measured equivalence ratio, ϕ

Figure 4. - Continued.



(d) Reading 91 - Measured Equivalence Ratio, ϕ

Figure 4. - Continued.



(e) Reading 92 - Measured Equivalence Ratio, ϕ

Figure 4. - Concluded.

Reading 88

t = 236.40 sec.

RAMJET PERFORMANCE

S U M M A R Y R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	G	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6														
0.000	999.500	3157	718.2(842)	1.2884	28.903	2645											
0.000	0.154	307	-55.5(74)	1.3967	28.901	858	7.249	6222	1.823	0.05857	14.837	0.9890	2909	5.664	196.0		
SPIKE TIP NS		2	0 6														
0.600	11.437	3157	718.2(842)	1.2879	28.901	2645											
0.600	10.576	3102	701.4(826)	1.2897	28.901	2623	0.350	918	2.131	0.05857	14.837	0.9890	3103	0.836	209.1		
WIND TUNNEL		3	0 0														
0.000	999.500	3157	718.2(842)	1.2884	28.903	2645											
0.000	0.172	316	-53.1(76)	1.3970	28.901	872	7.125	6213	1.823	0.06326	16.026	0.9890	3138	6.108	195.8		
SPIKE TIP NS		4	0 0														
0.600	11.437	3157	718.2(842)	1.2879	28.901	2645											
0.600	10.414	3091	698.1(823)	1.2900	28.901	2619	0.383	1004	2.131	0.06326	16.026	0.9890	3138	0.987	195.8		
INLET THROAT		5	0 3														
40.400	321.385	3088	697.1(822)	1.2906	28.902	2618											
40.400	10.616	1342	200.7(330)	1.3577	28.902	1770	2.816	4984	1.895	0.73761	14.837	0.0785	2512	57.130	169.3		
INLET UPNRSK		6	0 3														
40.400	321.385	3088	697.1(822)	1.2906	28.902	2618											
40.400	9.160	1290	187.4(316)	1.3608	28.901	1738	2.906	5050	1.895	0.67056	14.837	0.0864	2532	52.629	170.6		
INLET DNNRSK		7	0 4														
40.400	102.602	3088	697.1(822)	1.2905	28.902	2618											
40.400	89.397	2994	668.3(794)	1.2935	28.902	2581	0.465	1201	1.973	0.67056	14.837	0.0864	2532	12.811	170.6		
COMBUSTOR	0	8	1 3														
40.410	321.007	3088	697.0(822)	1.2906	28.902	2618											
40.410	10.620	1342	200.8(330)	1.3577	28.902	1770	2.815	4983	1.895	0.73752	14.837	0.0785	2512	57.112	169.3		
COMBUSTOR	0	9	2 3														
40.747	310.347	3082	695.1(820)	1.2908	28.902	2616											
40.747	10.862	1359	205.2(334)	1.3567	28.902	1781	2.780	4951	1.896	0.74023	14.837	0.0783	2501	56.955	168.6		
COMBUSTOR	0	10	3 4														
41.237	280.789	3072	692.1(817)	1.2911	28.902	2612											
41.237	11.314	1405	217.3(346)	1.3539	28.901	1809											
							2.695	4875	1.902	0.73431	14.837	0.0789	2477	55.629	166.9		
COMBUSTOR	0	11	4 4														
41.500	258.027	3067	690.5(815)	1.2912	28.902	2610											
41.500	11.681	1445	227.9(357)	1.3515	28.901	1833	2.625	4811	1.907	0.72733	14.837	0.0796	2457	54.383	165.6		
COMBUSTOR	0	12	5 5														
42.460	206.843	3046	684.3(809)	1.2918	28.902	2602											
42.460	12.056	1531	250.7(380)	1.3467	28.901	1883	2.473	4658	1.921	0.68597	14.837	0.0844	2409	49.654	162.3		
COMBUSTOR	0	13	6 5														
42.732	199.115	3040	682.5(807)	1.2920	28.902	2599											
42.732	12.037	1542	253.7(383)	1.3461	28.901	1890	2.451	4632	1.923	0.67628	14.837	0.0857	2400	48.683	161.8		
COMBUSTOR	0	14	7 5														
42.797	197.270	3039	682.0(807)	1.2921	28.902	2599											
42.797	12.028	1545	254.4(383)	1.3460	28.901	1891	2.446	4626	1.923	0.67376	14.837	0.0860	2398	48.439	161.6		
COMBUSTOR	0	15	8 5														
44.310	167.012	3009	672.9(798)	1.2930	28.902	2587											
44.310	11.661	1581	264.2(393)	1.3440	28.901	1912	2.365	4522	1.932	0.62369	14.837	0.0929	2363	43.834	159.3		
COMBUSTOR	0	16	9 4														
44.800	161.175	3000	670.3(796)	1.2933	28.902	2584											
44.800	11.651	1590	266.6(396)	1.3436	28.901	1917	2.344	4494	1.933	0.61590	14.837	0.0941	2353	43.019	158.6		
COMBUSTOR	0	17	10 4														
45.517	155.960	2988	666.5(792)	1.2937	28.902	2579											
45.517	11.718	1599	268.8(398)	1.3432	28.901	1922	2.321	4461	1.934	0.61162	14.837	0.0947	2341	42.401	157.8		
COMBUSTOR	0	18	11 4														
46.232	151.042	2975	662.7(788)	1.2940	28.902	2573											
46.232	11.375	1592	267.0(396)	1.3435	28.901	1918	2.320	4449	1.935	0.59465	14.837	0.0974	2336	41.119	157.4		

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              P     T      H            GAMMA  MOLWT SONV  MACH  VEL   S      W/A      W     A/AC    WOPTM   Q     IVAC  PHI  ETAC
COMBUSTOR      0   19   12   4
46.260   150.790 2975  662.5( 788) 1.2941 28.902 2573
46.260    11.338 1591  266.6( 396) 1.3456 28.901 1918 2.321 4450 1.935 0.59314 14.837 0.0977   2336 41.020 157.4
COMBUSTOR      0   20   13   4
47.310   142.904 2955  656.6( 782) 1.2947 28.902 2565
47.310    10.295 1562  259.0( 388) 1.3451 28.902 1901 2.346 4461 1.937 0.54986 14.837 0.1053   2335 36.117 157.4
COMBUSTOR      0   21   14   3
48.110   137.724 2940  652.1( 778) 1.2951 28.902 2559
48.110     9.130 1520  247.8( 377) 1.3473 28.901 1877 2.396 4498 1.938 0.50529 14.837 0.1146   2342 35.318 157.9
COMBUSTOR      0   22   15   3
48.757   134.984 2928  648.4( 774) 1.2955 28.902 2554
48.757     7.871 1464  232.8( 362) 1.3505 28.901 1844 2.473 4560 1.938 0.45868 14.837 0.1263   2358 32.508 158.9
COMBUSTOR      0   23   16   3
50.207   131.110 2906  641.9( 768) 1.2962 28.902 2546
50.207     5.708 1345  201.5( 331) 1.3575 28.901 1772
                                                          2.649 4695 1.938 0.37275 14.837 0.1554   2392 27.196 161.2
COMBUSTOR      0   24   17   3
50.737   129.017 2901  640.4( 767) 1.2964 28.902 2544
50.737     5.174 1313  193.3( 322) 1.3594 28.901 1752 2.699 4730 1.938 0.34861 14.837 0.1662   2401 25.626 161.9
COMBUSTOR      0   25   18   3
52.147   124.029 2890  637.1( 763) 1.2967 28.902 2539
52.147     4.103 1242  174.9( 304) 1.3639 28.901 1707 2.817 4809 1.940 0.29711 14.837 0.1950   2423 22.205 163.3
COMBUSTOR      0   26   19  21
54.247   104.551 2863  630.6( 760) 1.2976 28.732 2535
54.247     2.075 1070  129.9( 262) 1.3747 28.732 1595 3.138 5005 1.960 0.24439 14.890 0.2379   2443 19.011 164.1 0.02 0.07
COMBUSTOR      0   27   20  21
54.747   107.863 2855  629.8( 757) 1.2980 28.726 2532
54.747     2.398 1095  137.8( 268) 1.3732 28.725 1613 3.076 4962 1.957 0.23440 14.890 0.2480   2446 18.074 164.3 0.02 0.01
COMBUSTOR      0   28   21  21
55.497   100.559 2850  628.6( 756) 1.2981 28.725 2531
55.497     1.771 1030  121.6( 252) 1.3772 28.724 1567 3.215 5037 1.961 0.22096 14.890 0.2631   2450 17.296 164.6 0.02 0.00
COMBUSTOR      0   29   22  21
55.760    96.531 2849  628.2( 755) 1.2982 28.724 2530
55.760     1.564 1006  115.6( 246) 1.3786 28.724 1549 3.269 5064 1.964 0.21663 14.890 0.2684   2451 17.050 164.6 0.02 0.00
COMBUSTOR      0   30   23  21
56.257    89.009 2873  627.5( 762) 1.2969 28.756 2538
56.257     1.419 1012  109.3( 247) 1.3780 28.755 1553 3.278 5092 1.972 0.17094 14.890 0.3401   2460 13.527 166.6 0.02 0.31
COMBUSTOR      0   31   24 202
57.682    80.116 2926  625.7( 777) 1.2944 28.824 2556
57.682     2.273 1211  142.6( 297) 1.3651 28.824 1689 2.911 4917 1.982 0.15800 14.890 0.3679   2490 12.072 167.2 0.02 1.00
COMBUSTOR      0   32   25 200
57.737    80.570 2926  625.6( 777) 1.2944 28.824 2556
57.737     2.070 1180  134.5( 289) 1.3671 28.824 1668 2.972 4958 1.981 0.15758 14.890 0.3689   2490 12.141 167.2 0.02 1.00
COMBUSTOR      0   33   26 200
57.877    80.426 2925  625.5( 777) 1.2944 28.824 2556
57.877     2.124 1188  136.6( 291) 1.3666 28.824 1674 2.955 4946 1.981 0.15645 14.890 0.3716   2491 12.025 167.3 0.02 1.00
COMBUSTOR      0   34   27 200
57.957    80.372 2925  625.4( 777) 1.2944 28.824 2555
57.957     2.484 1239  149.8( 304) 1.3634 28.824 1707 2.858 4878 1.981 0.15817 14.890 0.3675   2492 11.992 167.3 0.02 1.00
COMBUSTOR      0   35   28 200
58.237    79.763 2924  625.1( 776) 1.2944 28.824 2555
58.237     2.700 1269  157.5( 312) 1.3615 28.824 1726 2.802 4837 1.982 0.15770 14.890 0.3686   2494 11.855 167.5 0.02 1.00
COMBUSTOR      0   36   29 200
58.463    81.837 2923  624.8( 776) 1.2945 28.824 2555
58.463     2.415 1223  145.6( 300) 1.3644 28.824 1696 2.867 4897 1.980 0.15735 14.890 0.3695   2495 11.975 167.6 0.02 1.00
COMBUSTOR      0   37   30  21
59.187    81.613 2921  624.1( 775) 1.2945 28.824 2554
59.187     1.500 1075  107.8( 262) 1.3737 28.823 1596 3.164 5082 1.980 0.15491 14.890 0.3753   2496 12.235 167.7 0.02 1.00
```

READING = 0088 BLOCK = 131 TIME = 236.401 MACH 7.2 PT = 999.500 TT = 3157.3

	P	T	H	GAMMA	MOLWT	SONV	MACH	VFL	S	W/A	W	A/AC	MOMTM	G	IVAC	PHI	ETAC
COMBUSTOR	0	38	31 200														
60.207	82.333	2917	623.1(775)	1.2946	28.824	2552											
60.207	2.050	1166	130.9(286)	1.3660	28.824	1659	2.992	4963	1.979	0.15392	14.890	0.3777	2495	11.672	167.6	0.02	1.00
COMBUSTOR	0	39	32 21														
62.217	79.146	2913	621.8(773)	1.2948	28.824	2551											
62.217	1.450	1071	106.8(261)	1.3739	28.824	1593	3.186	5076	1.981	0.15928	14.890	0.3650	2485	12.566	166.9	0.02	1.00
COMBUSTOR	0	40	33 21														
63.637	76.975	2910	621.0(772)	1.2949	28.824	2550											
63.637	1.387	1065	105.3(260)	1.3743	28.823	1589	3.197	5080	1.983	0.16360	14.890	0.3553	2477	12.915	166.4	0.02	1.00
COMBUSTOR	0	41	34 21														
66.101	68.731	2906	619.7(771)	1.2950	28.824	2548											
66.101	1.351	1089	111.2(266)	1.3728	28.823	1606	3.141	5044	1.990	0.15507	14.890	0.3749	2464	12.155	165.5	0.02	1.00
COMBUSTOR	0	42	35 21														
66.477	63.642	2905	619.4(771)	1.2950	28.824	2547											
66.477	1.288	1097	113.3(268)	1.3723	28.823	1611	3.123	5032	1.996	0.14417	14.890	0.4032	2462	11.275	165.3	0.02	1.00
COMBUSTOR REGEN		43	36 4														
66.477	63.642	3277	734.0(882)	1.2827	28.823	2693											
66.477	2.194	1458	207.1(362)	1.3502	28.824	1842	2.787	5135	2.033	0.14417	14.890	0.4032	2603	11.505	174.8	0.02	1.00
NOZZLE AE		44	37 3														
88.713	63.642	2905	619.4(767)	1.2950	28.824	2547											
88.713	0.184	638	-0.4(154)	1.3958	28.824	1240	4.493	5569	1.996	0.03001	14.890	1.9371	2669	2.597	179.2	0.02	1.00
NOZZLE PO		45	38 3														
88.713	63.642	2905	619.4(767)	1.2950	28.824	2547											
88.713	0.154	607	-8.0(147)	1.3966	28.824	1209	4.635	5603	1.996	0.02658	14.890	2.1868	2680	2.315	180.0	0.02	1.00
NOZZLE AE REGEN		46	39 4														
88.713	63.642	3277	734.0(882)	1.2827	28.823	2693											
88.713	0.209	770	31.7(186)	1.3908	28.824	1359	4.363	5928	2.033	0.03001	14.890	1.9371	2847	2.765	191.2	0.02	1.00
NOZZLE PO REGEN		47	40 4														
88.713	63.642	3277	734.0(882)	1.2827	28.823	2693											
88.713	0.194	707	16.3(171)	1.3934	28.824	1303	4.598	5993	2.033	0.02441	14.890	2.3818	2868	2.273	192.6	0.02	1.00
FICTIVE COMBUSTR		66	59 0														
66.477	321.385	2905	619.4(771)	1.2951	28.824	2548											
66.477	0.154	383	-62.3(92)	1.3980	28.824	961	6.081	5841	1.884	0.04394	14.890	1.3229	2755	3.989	185.0	0.02	1.00
FICTIVE NOZZLE		67	60 0														
88.713	165.817	2849	602.5(754)	1.2969	28.824	2525											
88.713	0.117	417	-54.1(101)	1.3984	28.824	1002	5.718	5732	1.924	0.03001	14.890	1.9371	2711	2.673	182.1	0.02	1.00

ORIGINAL PAGE IS OF POOR QUALITY

READING = 0088 BLOCK = 131 TIME = 236.401 MACH 7.2 PT = 999.500 TT = 3157.3

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.762E-01	0.000	0.000	0.000	2.470E-02	4.471E 00	6.903E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.471E 00	6.903E-04	0.000	0.000
3.070E 01	1.020E 00	0.000	-9.228E 01	0.000	0.000	0.000	5.053E 02	6.609E 00	1.021E-03	0.000	0.000
3.508E 01	1.876E 00	0.000	-1.861E 02	0.000	0.000	0.000	6.804E 02	1.215E 01	1.877E-03	0.000	0.000
3.555E 01	2.100E 00	0.000	-2.042E 02	0.000	0.000	0.000	7.013E 02	1.361E 01	2.101E-03	0.000	0.000
3.606E 01	2.080E 00	0.000	-2.254E 02	-1.057E 02	-1.057E 02	0.000	7.246E 02	1.348E 01	2.081E-03	0.000	0.000
3.648E 01	2.267E 00	0.000	-2.440E 02	-1.083E 02	-1.083E 02	0.000	7.443E 02	1.469E 01	2.268E-03	0.000	0.000
3.661E 01	2.298E 00	3.234E 00	-2.838E 02	-1.091E 02	-1.091E 02	0.000	7.507E 02	1.489E 01	2.299E-03	2.096E 01	3.236E-03
3.662E 01	2.300E 00	3.250E 00	-2.839E 02	-1.092E 02	-1.092E 02	0.000	7.509E 02	1.490E 01	2.301E-03	2.106E 01	3.252E-03
3.701E 01	2.390E 00	4.265E 00	-2.860E 02	-1.117E 02	-1.117E 02	0.000	7.913E 02	1.549E 01	2.391E-03	2.763E 01	4.267E-03
3.729E 01	2.283E 00	4.987E 00	-2.858E 02	-1.135E 02	-1.135E 02	0.000	8.204E 02	1.479E 01	2.284E-03	3.232E 01	4.990E-03
3.803E 01	1.995E 00	8.318E 00	-2.691E 02	-1.188E 02	-1.188E 02	0.000	9.004E 02	1.293E 01	1.996E-03	5.389E 01	8.322E-03
3.875E 01	6.483E 00	1.153E 01	-2.659E 02	-1.855E 02	-1.264E 02	-5.903E 01	9.802E 02	4.201E 01	6.486E-03	7.471E 01	1.154E-02
3.875E 01	6.502E 00	1.152E 01	-2.659E 02	-1.857E 02	-1.265E 02	-5.920E 01	9.806E 02	4.213E 01	6.506E-03	7.465E 01	1.153E-02
3.901E 01	8.130E 00	1.063E 01	-2.699E 02	-2.038E 02	-1.305E 02	-7.338E 01	1.010E 03	5.268E 01	8.134E-03	6.884E 01	1.063E-02
3.950E 01	1.117E 01	8.938E 00	-2.865E 02	-2.401E 02	-1.401E 02	-1.000E 02	1.066E 03	7.236E 01	1.117E-02	5.791E 01	8.942E-03
3.977E 01	1.090E 01	8.019E 00	-2.964E 02	-2.611E 02	-1.466E 02	-1.145E 02	1.097E 03	7.061E 01	1.090E-02	5.196E 01	8.023E-03
4.000E 01	1.066E 01	7.743E 00	-3.025E 02	-2.802E 02	-1.531E 02	-1.271E 02	1.124E 03	6.909E 01	1.067E-02	5.017E 01	7.747E-03
4.024E 01	1.116E 01	7.462E 00	-3.094E 02	-3.001E 02	-1.602E 02	-1.399E 02	1.151E 03	7.231E 01	1.117E-02	4.835E 01	7.466E-03
4.040E 01	1.150E 01	8.462E 00	-3.135E 02	-3.140E 02	-1.653E 02	-1.487E 02	1.170E 03	7.453E 01	1.151E-02	5.483E 01	8.466E-03
4.041E 01	1.152E 01	8.523E 00	-3.137E 02	-3.149E 02	-1.657E 02	-1.492E 02	1.172E 03	7.466E 01	1.153E-02	5.522E 01	8.527E-03
4.075E 01	1.223E 01	1.059E 01	-3.192E 02	-3.441E 02	-1.767E 02	-1.674E 02	1.211E 03	7.925E 01	1.224E-02	6.860E 01	1.059E-02
4.124E 01	1.326E 01	1.937E 00	-3.359E 02	-3.874E 02	-1.941E 02	-1.933E 02	1.269E 03	8.592E 01	1.327E-02	1.255E 01	1.938E-03
4.150E 01	1.381E 01	2.003E 00	-3.514E 02	-4.111E 02	-2.041E 02	-2.070E 02	1.300E 03	8.950E 01	1.382E-02	1.298E 01	2.004E-03
4.246E 01	6.825E 00	2.241E 00	-3.853E 02	-5.035E 02	-2.431E 02	-2.604E 02	1.414E 03	4.422E 01	6.828E-03	1.452E 01	2.242E-03
4.273E 01	6.985E 00	2.309E 00	-3.898E 02	-5.307E 02	-2.544E 02	-2.763E 02	1.446E 03	4.526E 01	6.988E-03	1.496E 01	2.310E-03
4.280E 01	7.023E 00	2.325E 00	-3.909E 02	-5.371E 02	-2.570E 02	-2.801E 02	1.454E 03	4.550E 01	7.026E-03	1.506E 01	2.326E-03
4.431E 01	7.912E 00	5.315E 00	-4.049E 02	-6.721E 02	-3.144E 02	-3.577E 02	1.636E 03	5.126E 01	7.916E-03	3.444E 01	5.318E-03
4.480E 01	8.200E 00	6.283E 00	-4.078E 02	-7.112E 02	-3.312E 02	-3.801E 02	1.696E 03	5.313E 01	8.204E-03	4.071E 01	6.286E-03
4.552E 01	8.346E 00	7.700E 00	-4.101E 02	-7.674E 02	-3.546E 02	-4.128E 02	1.783E 03	5.408E 01	8.351E-03	4.989E 01	7.704E-03
4.623E 01	8.492E 00	7.650E 00	-4.064E 02	-8.244E 02	-3.771E 02	-4.473E 02	1.871E 03	5.502E 01	8.497E-03	4.957E 01	7.654E-03
4.626E 01	8.498E 00	7.648E 00	-4.059E 02	-8.267E 02	-3.780E 02	-4.487E 02	1.874E 03	5.506E 01	8.502E-03	4.956E 01	7.652E-03
4.731E 01	8.712E 00	7.575E 00	-3.937E 02	-9.143E 02	-4.094E 02	-5.049E 02	2.004E 03	5.645E 01	8.717E-03	4.906E 01	7.579E-03
4.811E 01	7.925E 00	7.520E 00	-3.770E 02	-9.820E 02	-4.322E 02	-5.498E 02	2.103E 03	5.135E 01	7.929E-03	4.872E 01	7.524E-03
4.876E 01	7.475E 00	7.475E 00	-3.547E 02	-1.036E 03	-4.498E 02	-5.863E 02	2.184E 03	4.843E 01	7.479E-03	4.843E 01	7.479E-03
5.021E 01	5.284E 00	5.284E 00	-3.070E 02	-1.132E 03	-4.869E 02	-6.451E 02	2.365E 03	3.424E 01	5.287E-03	3.424E 01	5.287E-03
5.074E 01	4.483E 00	4.483E 00	-2.935E 02	-1.155E 03	-4.997E 02	-6.551E 02	2.431E 03	2.905E 01	4.486E-03	2.905E 01	4.486E-03
5.215E 01	3.887E 00	3.887E 00	-2.626E 02	-1.204E 03	-5.314E 02	-6.726E 02	2.609E 03	2.519E 01	3.889E-03	2.519E 01	3.889E-03
5.425E 01	2.075E 00	2.075E 00	-2.298E 02	-1.267E 03	-5.728E 02	-6.937E 02	2.875E 03	1.344E 01	2.076E-03	1.344E 01	2.076E-03
5.475E 01	2.358E 00	2.358E 00	-2.240E 02	-1.279E 03	-5.817E 02	-6.975E 02	2.939E 03	1.528E 01	2.360E-03	1.528E 01	2.360E-03
5.550E 01	1.771E 00	1.771E 00	-2.160E 02	-1.297E 03	-5.942E 02	-7.023E 02	3.035E 03	1.147E 01	1.771E-03	1.147E 01	1.771E-03
5.576E 01	1.564E 00	1.564E 00	-2.138E 02	-1.302E 03	-5.984E 02	-7.040E 02	3.068E 03	1.014E 01	1.565E-03	1.014E 01	1.565E-03
5.626E 01	1.662E 00	1.175E 00	-1.839E 02	-1.313E 03	-6.059E 02	-7.070E 02	3.102E 03	1.077E 01	1.663E-03	7.613E 00	1.176E-03
5.768E 01	2.273E 00	2.273E 00	-1.716E 02	-1.340E 03	-6.248E 02	-7.150E 02	3.209E 03	1.472E 01	2.274E-03	1.472E 01	2.274E-03
5.774E 01	1.825E 00	2.315E 00	-1.710E 02	-1.341E 03	-6.254E 02	-7.153E 02	3.217E 03	1.182E 01	1.826E-03	1.500E 01	2.316E-03
5.788E 01	1.825E 00	2.423E 00	-1.694E 02	-1.343E 03	-6.271E 02	-7.160E 02	3.234E 03	1.182E 01	1.826E-03	1.570E 01	2.424E-03
5.796E 01	2.484E 00	2.484E 00	-1.684E 02	-1.344E 03	-6.280E 02	-7.165E 02	3.245E 03	1.610E 01	2.486E-03	1.610E 01	2.486E-03
5.824E 01	2.700E 00	2.700E 00	-1.651E 02	-1.349E 03	-6.312E 02	-7.180E 02	3.280E 03	1.749E 01	2.701E-03	1.749E 01	2.701E-03
5.846E 01	2.415E 00	2.415E 00	-1.626E 02	-1.353E 03	-6.337E 02	-7.192E 02	3.309E 03	1.564E 01	2.416E-03	1.564E 01	2.416E-03
5.919E 01	1.500E 00	1.500E 00	-1.573E 02	-1.364E 03	-6.410E 02	-7.232E 02	3.402E 03	9.719E 00	1.501E-03	9.719E 00	1.501E-03
6.021E 01	2.050E 00	2.050E 00	-1.532E 02	-1.378E 03	-6.499E 02	-7.283E 02	3.532E 03	1.328E 01	2.051E-03	1.328E 01	2.051E-03
6.222E 01	1.450E 00	1.450E 00	-1.527E 02	-1.399E 03	-6.629E 02	-7.356E 02	3.790E 03	9.395E 00	1.451E-03	9.395E 00	1.451E-03
6.364E 01	1.387E 00	1.387E 00	-1.527E 02	-1.410E 03	-6.698E 02	-7.404E 02	3.972E 03	8.990E 00	1.388E-03	8.990E 00	1.388E-03
6.610E 01	1.351E 00	1.351E 00	-1.527E 02	-1.430E 03	-6.794E 02	-7.510E 02	4.289E 03	8.757E 00	1.352E-03	8.757E 00	1.352E-03
6.648E 01	1.230E 00	1.346E 00	-1.527E 02	-1.433E 03	-6.807E 02	-7.527E 02	4.337E 03	7.970E 00	1.231E-03	8.721E 00	1.347E-03
6.652E 01	1.230E 00	1.345E 00	-1.527E 02	-1.434E 03	-6.808E 02	-7.529E 02	4.342E 03	7.970E 00	1.231E-03	8.717E 00	1.346E-03

READING = 0088 BLOCK = 131 TIME = 236.401 MACH 7.2 PT = 999.500 TT = 3157.5

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/P80	P-IB/PTO	P-OB/P80	P-OB/PTO
6.672E 01	1.354E 00	1.342E 00	-1.527E 02	-1.435E 03	-6.814E 02	-7.539E 02	4.368E 03	8.774E 00	1.355E-03	8.696E 00	1.343E-03
6.838E 01	2.365E 00	1.570E 00	-1.348E 02	-1.449E 03	-6.867E 02	-7.626E 02	4.584E 03	1.545E 01	2.366E-03	1.017E 01	1.571E-03
6.905E 01	1.710E 00	1.380E 00	-9.906E 01	-1.455E 03	-6.888E 02	-7.667E 02	4.665E 03	1.108E 01	1.711E-03	8.941E 00	1.381E-03
6.982E 01	9.350E-01	1.171E 00	-6.275E 01	-1.463E 03	-6.912E 02	-7.721E 02	4.760E 03	6.058E 00	9.355E-04	7.585E 00	1.171E-03
7.054E 01	8.321E-01	9.750E-01	-3.748E 01	-1.471E 03	-6.934E 02	-7.779E 02	4.848E 03	5.392E 00	8.326E-04	6.317E 00	9.755E-04
7.115E 01	7.450E-01	9.481E-01	-1.854E 01	-1.477E 03	-6.952E 02	-7.822E 02	4.922E 03	4.827E 00	7.454E-04	6.143E 00	9.486E-04
7.253E 01	6.400E-01	8.874E-01	1.813E 01	-1.486E 03	-6.991E 02	-7.869E 02	5.088E 03	4.147E 00	6.403E-04	5.750E 00	8.878E-04
7.406E 01	4.396E-01	8.200E-01	5.055E 01	-1.496E 03	-7.027E 02	-7.931E 02	5.273E 03	2.849E 00	4.399E-04	5.313E 00	8.204E-04
7.421E 01	4.200E-01	7.183E-01	5.305E 01	-1.497E 03	-7.030E 02	-7.942E 02	5.290E 03	2.721E 00	4.202E-04	4.654E 00	7.187E-04
7.496E 01	4.669E-01	2.100E-01	6.855E 01	-1.505E 03	-7.044E 02	-8.007E 02	5.374E 03	3.025E 00	4.671E-04	1.361E 00	2.101E-04
7.496E 01	4.671E-01	2.073E-01	6.897E 01	-1.505E 03	-7.044E 02	-8.007E 02	5.375E 03	3.027E 00	4.674E-04	1.343E 00	2.074E-04
7.629E 01	5.500E-01	0.000	7.971E 01	-1.521E 03	-7.063E 02	-8.144E 02	5.426E 03	3.564E 00	5.503E-04	0.000	0.000
7.914E 01	1.950E-01	0.000	9.461E 01	-1.493E 03	-7.091E 02	-7.841E 02	5.525E 03	1.263E 00	1.951E-04	0.000	0.000
8.304E 01	2.000E-01	0.000	1.031E 02	-1.496E 03	-7.110E 02	-7.847E 02	5.630E 03	1.296E 00	2.001E-04	0.000	0.000
8.585E 01	2.550E-01	0.000	1.081E 02	-1.684E 03	-7.119E 02	-9.719E 02	5.684E 03	1.652E 00	2.551E-04	0.000	0.000
8.871E 01	3.150E-01	0.000	1.150E 02	-1.685E 03	-7.136E 02	-9.719E 02	5.707E 03	2.041E 00	3.152E-04	0.000	0.000
8.871E 01	3.151E-01	0.000	1.150E 02	-1.685E 03	-7.136E 02	-9.719E 02	5.707E 03	2.042E 00	3.153E-04	0.000	0.000

READING = 0088 BLOCK = 131 TIME = 236.401 MACH 7.2 PT = 999.500 TT = 5157.3

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.362E 01	8.362E 01	2.275E-03	3.401E-02
4.041E 01	1.525E-01	8.378E 01	2.275E-03	3.404E-02
4.075E 01	5.142E 00	8.892E 01	2.296E-03	3.536E-02
4.124E 01	7.530E 00	9.645E 01	2.348E-03	3.604E-02
4.150E 01	4.047E 00	1.005E 02	2.391E-03	3.652E-02
4.246E 01	1.447E 01	1.150E 02	2.486E-03	3.617E-02
4.273E 01	3.976E 00	1.189E 02	2.501E-03	3.591E-02
4.280E 01	9.478E-01	1.199E 02	2.504E-03	3.584E-02
4.431E 01	2.129E 01	1.412E 02	2.558E-03	3.400E-02
4.480E 01	6.636E 00	1.478E 02	2.572E-03	3.300E-02
4.552E 01	9.634E 00	1.574E 02	2.587E-03	3.379E-02
4.623E 01	9.462E 00	1.669E 02	2.586E-03	3.283E-02
4.626E 01	3.649E-01	1.673E 02	2.586E-03	3.273E-02
4.731E 01	1.320E 01	1.805E 02	2.567E-03	3.003E-02
4.811E 01	9.285E 00	1.898E 02	2.536E-03	2.713E-02
4.876E 01	6.854E 00	1.966E 02	2.486E-03	2.400E-02
5.021E 01	1.316E 01	2.098E 02	2.381E-03	1.841E-02
5.074E 01	4.157E 00	2.139E 02	2.353E-03	1.693E-02
5.219E 01	9.843E 00	2.238E 02	2.283E-03	1.309E-02
5.425E 01	1.246E 01	2.362E 02	2.257E-03	7.974E-03
5.475E 01	2.632E 00	2.389E 02	2.197E-03	8.817E-03
5.550E 01	3.698E 00	2.426E 02	2.167E-03	7.034E-03
5.576E 01	1.252E 00	2.438E 02	2.164E-03	6.378E-03
5.626E 01	1.084E 00	2.449E 02	2.067E-03	5.675E-03
5.768E 01	2.897E 00	2.478E 02	2.136E-03	7.645E-03
5.774E 01	1.846E-01	2.480E 02	2.192E-03	7.247E-03
5.788E 01	4.710E-01	2.485E 02	2.194E-03	7.378E-03
5.796E 01	2.709E-01	2.487E 02	2.215E-03	8.282E-03
5.824E 01	9.441E-01	2.497E 02	2.225E-03	8.764E-03
5.846E 01	7.591E-01	2.504E 02	2.194E-03	6.095E-03
5.919E 01	2.420E 00	2.528E 02	2.123E-03	5.655E-03
6.021E 01	3.368E 00	2.562E 02	2.153E-03	7.120E-03
6.222E 01	6.739E 00	2.630E 02	2.125E-03	5.482E-03
6.364E 01	4.939E 00	2.679E 02	2.131E-03	5.293E-03
6.610E 01	8.545E 00	2.764E 02	2.181E-03	5.143E-03
6.648E 01	1.242E 00	2.777E 02	2.213E-03	4.930E-03
6.652E 01	1.122E-01	2.778E 02	2.180E-03	4.852E-03
6.672E 01	4.894E-01	2.783E 02	2.187E-03	5.024E-03
6.838E 01	4.750E 00	2.830E 02	2.248E-03	6.705E-03
6.905E 01	1.869E 00	2.849E 02	2.200E-03	5.544E-03
6.982E 01	1.767E 00	2.867E 02	2.127E-03	4.124E-03
7.054E 01	1.360E 00	2.880E 02	2.096E-03	3.600E-03
7.115E 01	1.062E 00	2.891E 02	2.083E-03	3.476E-03
7.253E 01	2.251E 00	2.913E 02	2.061E-03	3.205E-03
7.406E 01	2.248E 00	2.936E 02	2.021E-03	2.753E-03
7.421E 01	1.893E-01	2.938E 02	2.003E-03	2.546E-03
7.496E 01	7.549E-01	2.945E 02	1.915E-03	1.705E-03
7.496E 01	1.186E-03	2.945E 02	1.915E-03	1.700E-03
7.629E 01	4.556E-01	2.950E 02	1.990E-03	2.470E-03
7.914E 01	7.355E-01	2.957E 02	1.816E-03	1.108E-03
8.304E 01	5.162E-01	2.962E 02	1.807E-03	1.121E-03
8.585E 01	2.949E-01	2.965E 02	1.835E-03	1.343E-03
8.871E 01	1.436E-01	2.967E 02	1.859E-03	1.572E-03
8.871E 01	0.000	2.967E 02	1.859E-03	1.573E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-198.	(LBF)
MEASURED THRUST	-253.	(LBF)
CALCULATED SPECIFIC IMPULSE	******	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	******	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.1366	
MEASURED THRUST COEFFICIENT	-.1741	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	2892.	(LBF)
NET THRUST	-17.	(LBF)
SPECIFIC IMPULSE	-2354.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.0117	

MOMENTUM AND FORCES

INLET FRICTION DRAG	83.6	(LBF)
INLET MOMENTUM CHANGE	-397.1	(LBF)
COMBUSTOR FRICTION DRAG	194.1	(LBF)
COMBUSTOR STRUT DRAG	16.51	(LBF)
COMBUSTOR MOMENTUM CHANGE	-50.	(LBF)
NOZZLE FRICTION DRAG	19.00	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	249.	(LBF)
NOZZLE PRESSURE INTEGRAL	268.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-725.	(LBF)
TOTAL STRUT DRAG	16.51	(LBF)
CAVITY FORCE	-529.	(LBF)
CALCULATED LOAD CELL FORCE	-1453.	(LBF)
MEASURED LOAD CELL FORCE	-1507.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE		

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7369	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.621	(IN)
NOZZLE SHROUD TRAILING EDGE	74.961	(IN)
NOZZLE PLUG TRAILING EDGE	88.713	(IN)
STRUT LEADING EDGE	57.877	(IN)
STRUT TRAILING EDGE	66.477	(IN)
COMBUSTOR EXIT	66.477	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9890	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1013	
DELTA PT2	0.0899	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3215	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1027	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9008	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9121	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9398	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8904	
ENTHALPY AT PO - SUPERSONIC	-30.10	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	8.12	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0005
EQUIVALENCE RATIO	0.015
COMBUSTOR EFFICIENCY	1.000
TOTAL PRESSURE RATIO	0.1980
COMBUSTOR EFFECTIVENESS	0.6789
INJECTOR DISCHARGE COEFFICIENTS	

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	1.0157
NOZZLE COEFFICIENT - CT	0.9830
PROCESS EFFICIENCY	1.2632
KINETIC ENERGY EFFICIENCY	1.0281

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.722	
1C	44.300	
2A	50.197	
2C	46.250	
3A	55.487	
3B	57.672	
4	46.222	

Reading 88

t = 245.40 sec.

Combustor pressure distributions indicate the injected fuel did not ignite.

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	F/A	[illegible]	A/AC	PUMIN	Q	IVAC	PHI	ETAC
WIND TUNNEL	1	0 6														
0.000 998.999	3173	723.1(847)	1.2880	28.903	2651											
0.000 0.154	309	-55.0(74)	1.3967	28.901	861	7.247	6240	1.825	0.05831	14.767	0.9888	2903	5.654	196.6		
SPIKE TIP NS	2	0 6														
0.600 11.425	3173	723.1(847)	1.2874	28.901	2651											
0.600 10.566	3118	706.2(830)	1.2892	28.901	2630	0.350	920	2.132	0.05831	14.767	0.9888	3098	0.834	209.8		
WIND TUNNEL	3	0 0														
0.000 998.999	3173	723.1(847)	1.2880	28.903	2651											
0.000 0.172	318	-52.7(76)	1.3970	28.901	875	7.122	6230	1.825	0.06301	15.958	0.9888	3134	6.101	196.4		
SPIKE TIP NS	4	0 0														
0.600 11.425	3173	723.1(847)	1.2874	28.901	2651											
0.600 10.404	3107	702.9(827)	1.2895	28.901	2625	0.383	1006	2.132	0.06301	15.958	0.9888	3134	0.985	196.4		
INLET THROAT	5	0 3														
40.400 326.559	3091	698.0(823)	1.2905	28.902	2620											
40.400 10.456	1332	198.2(327)	1.3583	28.901	1764	2.835	5001	1.894	0.73414	14.767	0.0785	2506	57.054	169.7		
INLET UPMRSK	6	0 3														
40.400 326.559	3091	698.0(823)	1.2905	28.902	2620											
40.400 9.024	1281	185.0(314)	1.3614	28.901	1732	2.925	5067	1.894	0.66740	14.767	0.0864	2525	52.550	171.0		
INLET DNNRSK	7	0 4														
40.400 102.388	3091	698.0(823)	1.2904	28.902	2620											
40.400 89.274	2997	669.3(795)	1.2933	28.902	2582	0.464	1198	1.973	0.66740	14.767	0.0864	2525	12.428	171.0		
COMBUSTOR 0	8	1 21														
40.410 258.417	3027	699.2(850)	1.2939	27.253	2673											
40.410 10.225	1370	202.3(357)	1.3575	27.253	1842	2.707	4986	2.000	0.73753	14.837	0.0785	2505	57.153	168.9	0.15	0.07
COMBUSTOR 0	9	2 3														
40.747 271.433	2971	697.2(833)	1.2960	27.198	2654											
40.747 11.795	1372	218.8(358)	1.3578	27.198	1846	2.651	4893	1.991	0.74024	14.837	0.0783	2493	56.289	168.0	0.15	0.01
COMBUSTOR 0	10	3 21														
41.237 235.531	2954	694.2(828)	1.2971	27.190	2647											
41.237 8.216	1286	197.3(335)	1.3630	27.190	1790	2.785	4987	2.000	0.73433	14.837	0.0789	2466	56.906	166.2	0.15	0.00
COMBUSTOR 0	11	4 21														
41.500 217.292	2948	692.5(826)	1.2973	27.189	2645											
41.500 8.658	1329	209.4(346)	1.3604	27.189	1818	2.704	4917	2.005	0.72734	14.837	0.0796	2444	55.576	164.7	0.15	0.00
COMBUSTOR 0	12	5 21														
42.460 140.822	2928	686.0(820)	1.2980	27.189	2636											
42.460 5.199	1292	199.2(334)	1.3626	27.188	1794	2.751	4936	2.034	0.68598	14.837	0.0844	2388	52.616	161.0	0.15	0.00
COMBUSTOR 0	13	6 21														
42.722 112.987	2878	686.5(844)	1.3007	25.872	2682											
42.722 5.410	1354	210.9(371)	1.3601	25.872	1881	2.594	4879	2.128	0.67941	14.900	0.0856	2378	51.542	159.6	0.29	0.04
COMBUSTOR 0	14	7 21														
42.732 120.958	2835	686.5(830)	1.3027	25.828	2666											
42.732 5.418	1306	211.1(358)	1.3633	25.828	1851	2.635	4877	2.119	0.67917	14.900	0.0857	2378	51.479	159.6	0.29	0.01
COMBUSTOR 0	15	8 21														
42.797 121.599	2827	686.0(828)	1.3031	25.821	2663											
42.797 5.471	1303	212.4(357)	1.3639	25.821	1850	2.632	4868	2.117	0.67665	14.900	0.0860	2375	51.194	159.4	0.29	0.00
COMBUSTOR 0	16	9 21														
44.310 120.879	2800	677.5(819)	1.3040	25.820	2652											
44.310 8.539	1452	256.2(400)	1.3552	25.820	1947	2.359	4592	2.115	0.62636	14.900	0.0929	2330	44.697	156.4	0.29	0.00
COMBUSTOR 0	17	10 21														
44.800 118.807	2794	675.4(817)	1.3042	25.820	2649											
44.800 9.533	1498	269.5(414)	1.3527	25.820	1975	2.282	4507	2.115	0.61853	14.900	0.0941	2317	43.320	155.5	0.29	0.00
COMBUSTOR 0	18	11 21														
45.517 104.746	2873	672.4(842)	1.3003	25.911	2677											
45.517 10.225	1628	279.4(451)	1.3452	25.911	2050	2.163	4435	2.133	0.61423	14.900	0.0947	2302	42.332	154.5	0.29	0.06

HEADING = DORP BLOCK = 141 TIME = 245.901 MACH 7.2 PT = 998.990 TT = 3175.1

	D	T	P	GAMMA	MOL WT	SONV	MACH	VEL	S	F/A	W	A/AC	FORTP	C	TVAC	PHT	ETAC
COMBUSTOR	0	19	12 21														
46.232	109.408	2788	669.2(915)	1.3041	25.834	2645											
46.232	9.722	1539	276.2(424)	1.3567	25.833	1997	2.220	4434	2.121	0.59720	14.900	0.0976	2296	41.155	154.1	0.29	0.01
COMBUSTOR	0	20	13 21														
46.260	110.677	2777	669.1(912)	1.3047	25.822	2641											
46.260	9.702	1522	276.1(421)	1.3514	25.822	1990	2.228	4434	2.119	0.59568	14.900	0.0977	2296	41.051	154.1	0.29	0.00
COMBUSTOR	0	21	14 21														
47.310	105.300	2758	663.6(866)	1.3053	25.820	2633											
47.310	8.963	1490	269.5(414)	1.3526	25.820	1976	2.246	4438	2.120	0.55221	14.900	0.1053	2297	38.090	154.2	0.29	0.00
COMBUSTOR	0	22	15 21														
48.110	97.952	2749	659.3(801)	1.3057	25.820	2627											
48.110	6.820	1419	245.1(389)	1.3972	25.820	1923	2.368	4552	2.124	0.50746	14.900	0.1146	2308	35.900	154.9	0.29	0.00
COMBUSTOR	0	23	16 21														
48.757	87.394	2846	655.7(932)	1.3009	25.935	2664											
48.757	7.600	1564	252.9(432)	1.3482	25.935	2011	2.233	4490	2.143	0.46064	14.900	0.1263	2325	32.143	156.1	0.29	0.08
COMBUSTOR	0	24	17 21														
50.207	91.169	2731	649.2(797)	1.3059	25.837	2620											
50.207	5.440	1351	221.2(371)	1.3606	25.837	1881	2.461	4628	2.128	0.37435	14.900	0.1554	2360	26.925	158.4	0.29	0.01
COMBUSTOR	0	25	18 21														
50.737	89.792	2711	647.5(791)	1.3068	25.823	2612											
50.737	4.650	1290	208.2(353)	1.3642	25.823	1841	2.547	4689	2.127	0.35010	14.900	0.1662	2369	25.511	159.0	0.29	0.00
COMBUSTOR	0	26	19 21														
52.147	86.955	2697	643.4(786)	1.3073	25.821	2605											
52.147	4.212	1259	200.0(344)	1.3660	25.820	1820	2.588	4710	2.128	0.29838	14.900	0.1950	2392	21.801	160.5	0.29	0.00
COMBUSTOR	0	27	20 21														
54.247	67.862	2670	635.9(781)	1.3082	25.705	2599											
54.247	1.975	1060	149.4(296)	1.3761	25.705	1699	2.904	4934	2.152	0.24534	14.948	0.2379	2413	18.812	161.4	0.30	0.00
COMBUSTOR	0	28	21 21														
54.747	69.594	2663	635.0(778)	1.3065	25.701	2596											
54.747	2.108	1093	153.2(298)	1.3757	25.701	1705	2.879	4910	2.149	0.23531	14.948	0.2480	2415	17.955	161.6	0.30	0.00
COMBUSTOR	0	29	22 21														
55.497	63.169	2659	633.9(777)	1.3086	25.700	2594											
55.497	1.670	1051	141.6(286)	1.3781	25.700	1674	2.965	4963	2.156	0.22182	14.948	0.2631	2418	17.109	161.6	0.30	0.00
COMBUSTOR	0	30	23 21														
55.760	60.382	2658	633.5(777)	1.3087	25.700	2594											
55.760	1.516	1039	137.3(282)	1.3769	25.699	1662	2.998	4983	2.159	0.21747	14.948	0.2684	2419	16.840	161.8	0.30	0.00
COMBUSTOR	0	31	24 21														
56.257	35.282	2809	632.8(823)	1.3016	25.856	2651											
56.257	1.062	1165	124.4(317)	1.3702	25.856	1752	2.879	5044	2.215	0.17160	14.948	0.3401	2036	13.450	163.0	0.30	0.10
COMBUSTOR	0	32	25 21														
57.682	58.003	2672	630.8(781)	1.3078	25.723	2599											
57.682	2.251	1174	169.2(321)	1.3708	25.723	1764	2.725	4806	2.164	0.15861	14.948	0.3679	2445	11.846	163.6	0.30	0.02
COMBUSTOR	0	33	26 21														
57.737	59.723	2652	630.7(775)	1.3088	25.703	2591											
57.737	1.958	1111	157.7(304)	1.3746	25.703	1719	2.830	4865	2.159	0.15819	14.948	0.3689	2445	11.960	163.6	0.30	0.00
COMBUSTOR	0	34	27 21														
57.877	60.194	2649	630.5(774)	1.3089	25.700	2590											
57.877	2.008	1119	159.6(305)	1.3744	25.700	1722	2.819	4854	2.158	0.15705	14.948	0.3716	2446	11.848	163.7	0.30	0.00
COMBUSTOR	0	35	28 3														
57.957	56.078	2697	630.4(789)	1.3067	25.749	2609											
57.957	2.448	1226	175.6(336)	1.3676	25.749	1799	2.652	4771	2.169	0.15878	14.948	0.3675	2447	11.772	163.7	0.30	0.03
COMBUSTOR	0	36	29 4														
58.237	50.662	2762	630.1(809)	1.3037	25.816	2633											
58.237	2.650	1323	182.6(363)	1.3614	25.816	1863	2.541	4732	2.183	0.15631	14.948	0.3686	2449	11.642	163.8	0.30	0.08
COMBUSTOR	0	37	30 4														
58.463	57.749	2686	629.8(785)	1.3072	25.740	2604											
58.463	2.376	1209	171.4(329)	1.3692	25.739	1782	2.688	4789	2.165	0.15796	14.948	0.3695	2450	11.757	163.9	0.30	0.03

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READING = 0088  BLOCK = 141  TIME = 245.401  MACH  7.2  PT = 998.999  TT = 3173.1                                    PAGE  3

              P      T      H           GAMMA  MOLWT SONV  MACH  VEL   S      W/A      W      A/AC    MOMTM   C      IVAC  PHI  ETAC
COMBUSTOR      0   38   31  21
59.187     58.535 2649  625.9( 774) 1.3088 25.706 2590
59.187      1.500 1038  136.1( 283) 1.3787 25.706 1663 2.965 4966 2.160 0.15551 14.948 0.3753   2451 12.001 164.0 0.30 0.00
COMBUSTOR      0   39   32  21
60.207     61.508 2641  627.8( 771) 1.3092 25.701 2586
60.207      2.050 1111  158.3( 303) 1.3746 25.701 1719 2.820 4847 2.156 0.15452 14.948 0.3777   2450 11.638 163.9 0.30 0.00
COMBUSTOR      0   40   33  21
62.217     53.805 2635  626.2( 769) 1.3094 25.700 2584
62.217      1.175  987  123.6( 268) 1.3816 25.700 1624 3.088 5015 2.165 0.15990 14.948 0.3650   2440 12.462 163.2 0.30 0.00
COMBUSTOR      0   41   34  21
63.637     55.303 2633  625.4( 769) 1.3095 25.700 2583
63.637      1.337 1018  131.2( 276) 1.3801 25.699 1645 3.023 4973 2.163 0.16423 14.948 0.3593   2432 12.691 162.7 0.30 0.00
COMBUSTOR      0   42   35  21
66.101     39.157 2744  624.1( 803) 1.3042 25.816 2625
66.101      1.323 1169  137.9( 319) 1.3703 25.817 1756 2.809 4932 2.200 0.15567 14.948 0.3709   2419 11.933 161.6 0.30 0.08
COMBUSTOR      0   43   36  21
66.477     44.919 2646  624.0( 773) 1.3088 25.717 2587
66.477      1.286 1068  141.0( 291) 1.3769 25.717 1686 2.915 4916 2.180 0.14472 14.948 0.4032   2417 11.056 161.7 0.30 0.01
COMBUSTOR  REGEN   44   37   4
66.477     44.919 2887  703.9( 851) 1.3010 25.717 2695
66.477      2.580 1424  243.5( 394) 1.3566 25.717 1933 2.484 4800 2.209 0.14472 14.948 0.4032   2496 10.795 167.0 0.30 0.01
NOZZLE  AE         45   38   4
88.713     44.919 2646  624.0( 771) 1.3088 25.717 2587
88.713      0.214  647   24.4( 175) 1.3965 25.717 1321 4.145 5477 2.180 0.03013 14.948 1.9371   2651  2.564 177.3 0.30 0.01
NOZZLE  PO         46   39   4
88.713     44.919 2646  624.0( 771) 1.3088 25.717 2587
88.713      0.154  589    8.8( 159) 1.3981 25.717 1262 4.396 5548 2.180 0.02415 14.948 2.4164   2673  2.082 178.8 0.30 0.01
NOZZLE  AE REGEN   47   40   4
88.713     44.919 2887  703.9( 851) 1.3010 25.717 2695
88.713      0.233  737   49.0( 199) 1.3934 25.717 1409 4.064 5725 2.209 0.03013 14.948 1.9371   2775  2.680 185.7 0.30 0.01
NOZZLE  PO REGEN   48   41   4
88.713     44.919 2887  703.9( 851) 1.3010 25.717 2695
88.713      0.154  656   26.8( 177) 1.3962 25.717 1330 4.375 5821 2.209 0.02278 14.948 2.5621   2805  2.060 187.7 0.30 0.01
FICTIVE COMBUSTR   67   60   0
66.477    326.559 4068  624.0(1220) 1.2418 27.305 3033
66.477      0.154  630 -458.9( 163) 1.3863 27.330 1260 5.842 7361 2.118 0.03188 14.948 1.8306   3492  3.607 233.6 0.30 1.00
FICTIVE NOZZLE     66   61   0
88.713     41.013 2637  621.3( 770) 1.3091 25.717 2584
88.713      0.223  669   30.4( 181) 1.3958 25.717 1343 4.047 5437 2.186 0.03013 14.948 1.9371   2637  2.546 176.4 0.30 0.01
```

XABB	P-IH	P-OH	PCA	COX	Q-IH	Q-OH	CASALL	P-TH/PBC	P-IH/PTO	P-OH/PBC	P-OR/PTO
6.981E-01	6.900E-01	0.000	-2.759E-01	0.000	0.000	0.000	[illegible]	4.476E 00	[illegible]	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.294E 01	0.000	0.000	0.000	1.634E 02	4.476E 00	[illegible]	0.000	0.000
3.070E 01	1.020E 00	0.000	-2.226E 01	0.000	0.000	0.000	5.053E 02	6.616E 00	1.021E-03	0.000	0.000
3.508E 01	1.874E 00	0.000	-1.860E 02	0.000	0.000	0.000	6.804E 02	1.215E 01	1.876E-03	0.000	0.000
3.559E 01	2.100E 00	0.000	-2.042E 02	0.000	0.000	0.000	7.013E 02	1.362E 01	2.102E-03	0.000	0.000
3.606E 01	2.070E 00	0.000	-2.253E 02	-1.458E 02	-1.458E 02	0.000	7.246E 02	1.343E 01	2.072E-03	0.000	0.000
3.648E 01	2.268E 00	0.000	-2.439E 02	-1.494E 02	-1.494E 02	0.000	7.443E 02	1.471E 01	2.270E-03	0.000	0.000
3.661E 01	2.298E 00	3.237E 00	-2.837E 02	-1.505E 02	-1.505E 02	0.000	7.507E 02	1.491E 01	2.300E-03	2.100E 01	3.240E-03
3.662E 01	2.299E 00	3.252E 00	-2.838E 02	-1.506E 02	-1.506E 02	0.000	7.509E 02	1.491E 01	2.302E-03	2.110E 01	3.256E-03
3.701E 01	2.385E 00	4.266E 00	-2.858E 02	-1.540E 02	-1.540E 02	0.000	7.913E 02	1.547E 01	2.387E-03	2.767E 01	4.270E-03
3.729E 01	2.279E 00	4.987E 00	-2.856E 02	-1.566E 02	-1.566E 02	0.000	8.204E 02	1.478E 01	2.281E-03	3.235E 01	4.992E-03
3.803E 01	1.995E 00	8.321E 00	-2.689E 02	-1.638E 02	-1.638E 02	0.000	9.004E 02	1.294E 01	1.997E-03	5.398E 01	8.330E-03
3.875E 01	6.490E 00	1.154E 01	-2.657E 02	-2.353E 02	-1.732E 02	-6.209E 01	9.812E 02	4.210E 01	6.497E-03	7.484E 01	1.155E-02
3.875E 01	6.510E 00	1.153E 01	-2.657E 02	-2.355E 02	-1.733E 02	-6.227E 01	9.806E 02	4.223E 01	6.516E-03	7.477E 01	1.154E-02
3.901E 01	8.140E 00	1.063E 01	-2.697E 02	-2.550E 02	-1.778E 02	-7.718E 01	1.010E 03	5.280E 01	8.148E-03	6.897E 01	1.064E-02
3.950E 01	1.120E 01	8.949E 00	-2.864E 02	-2.935E 02	-1.883E 02	-1.052E 02	1.066E 03	7.268E 01	1.122E-02	5.805E 01	8.958E-03
3.977E 01	1.091E 01	8.031E 00	-2.964E 02	-3.155E 02	-1.951E 02	-1.204E 02	1.097E 03	7.076E 01	1.092E-02	5.210E 01	8.039E-03
4.000E 01	1.065E 01	7.743E 00	-3.024E 02	-3.394E 02	-2.017E 02	-1.337E 02	1.124E 03	6.908E 01	1.066E-02	5.023E 01	7.751E-03
4.024E 01	1.139E 01	7.450E 00	-3.095E 02	-3.562E 02	-2.090E 02	-1.471E 02	1.151E 03	7.386E 01	1.140E-02	4.833E 01	7.457E-03
4.040E 01	1.189E 01	8.463E 00	-3.139E 02	-3.706E 02	-2.142E 02	-1.564E 02	1.170E 03	7.715E 01	1.191E-02	5.490E 01	8.472E-03
4.041E 01	1.192E 01	8.525E 00	-3.141E 02	-3.715E 02	-2.146E 02	-1.569E 02	1.172E 03	7.735E 01	1.194E-02	5.530E 01	8.534E-03
4.075E 01	1.297E 01	1.062E 01	-3.207E 02	-4.018E 02	-2.258E 02	-1.760E 02	1.211E 03	8.414E 01	1.298E-02	6.888E 01	1.063E-02
4.124E 01	1.449E 01	1.937E 00	-3.402E 02	-4.468E 02	-2.435E 02	-2.033E 02	1.269E 03	9.402E 01	1.451E-02	1.257E 01	1.939E-03
4.150E 01	1.531E 01	2.004E 00	-3.576E 02	-4.713E 02	-2.537E 02	-2.176E 02	1.300E 03	9.933E 01	1.533E-02	1.300E 01	2.006E-03
4.246E 01	8.150E 00	2.249E 00	-3.977E 02	-5.674E 02	-2.928E 02	-2.746E 02	1.414E 03	5.287E 01	8.158E-03	1.459E 01	2.251E-03
4.272E 01	8.505E 00	2.315E 00	-4.036E 02	-5.948E 02	-3.035E 02	-2.913E 02	1.445E 03	5.517E 01	8.514E-03	1.502E 01	2.318E-03
4.273E 01	8.519E 00	2.318E 00	-4.038E 02	-5.958E 02	-3.039E 02	-2.919E 02	1.446E 03	5.526E 01	8.527E-03	1.503E 01	2.320E-03
4.280E 01	8.607E 00	2.334E 00	-4.052E 02	-6.025E 02	-3.065E 02	-2.960E 02	1.454E 03	5.583E 01	8.616E-03	1.514E 01	2.337E-03
4.431E 01	1.066E 01	6.418E 00	-4.274E 02	-7.294E 02	-3.599E 02	-3.694E 02	1.636E 03	6.915E 01	1.067E-02	4.163E 01	6.424E-03
4.480E 01	1.132E 01	7.740E 00	-4.333E 02	-7.608E 02	-3.745E 02	-3.863E 02	1.696E 03	7.346E 01	1.134E-02	5.021E 01	7.748E-03
4.592E 01	1.078E 01	9.675E 00	-4.382E 02	-8.053E 02	-3.943E 02	-4.110E 02	1.783E 03	6.989E 01	1.079E-02	6.276E 01	9.685E-03
4.623E 01	1.023E 01	9.217E 00	-4.339E 02	-8.530E 02	-4.134E 02	-4.396E 02	1.871E 03	6.634E 01	1.024E-02	5.979E 01	9.226E-03
4.626E 01	1.021E 01	9.199E 00	-4.334E 02	-8.550E 02	-4.141E 02	-4.409E 02	1.874E 03	6.620E 01	1.022E-02	5.967E 01	9.208E-03
4.731E 01	9.400E 00	8.527E 00	-4.185E 02	-9.360E 02	-4.408E 02	-4.952E 02	2.004E 03	6.097E 01	9.409E-03	5.531E 01	8.539E-03
4.811E 01	5.625E 00	8.014E 00	-3.976E 02	-1.001E 03	-4.602E 02	-5.412E 02	2.103E 03	3.649E 01	5.631E-03	5.199E 01	8.022E-03
4.876E 01	7.600E 00	7.600E 00	-3.736E 02	-1.054E 03	-4.752E 02	-5.785E 02	2.184E 03	4.930E 01	7.608E-03	4.930E 01	7.608E-03
5.021E 01	5.440E 00	5.440E 00	-3.249E 02	-1.151E 03	-5.068E 02	-6.440E 02	2.365E 03	3.529E 01	5.445E-03	3.529E 01	5.445E-03
5.074E 01	4.650E 00	4.650E 00	-3.110E 02	-1.176E 03	-5.177E 02	-6.587E 02	2.431E 03	3.016E 01	4.655E-03	3.016E 01	4.655E-03
5.215E 01	4.212E 00	4.212E 00	-2.782E 02	-1.238E 03	-5.448E 02	-6.936E 02	2.609E 03	2.732E 01	4.217E-03	2.732E 01	4.217E-03
5.425E 01	1.975E 00	1.975E 00	-2.441E 02	-1.314E 03	-5.802E 02	-7.340E 02	2.875E 03	1.281E 01	1.977E-03	1.281E 01	1.977E-03
5.479E 01	2.108E 00	2.108E 00	-2.388E 02	-1.327E 03	-5.878E 02	-7.391E 02	2.939E 03	1.368E 01	2.110E-03	1.368E 01	2.110E-03
5.550E 01	1.670E 00	1.670E 00	-2.315E 02	-1.344E 03	-5.986E 02	-7.453E 02	3.035E 03	1.083E 01	1.671E-03	1.083E 01	1.671E-03
5.576E 01	1.516E 00	1.516E 00	-2.294E 02	-1.350E 03	-6.022E 02	-7.475E 02	3.068E 03	9.832E 00	1.517E-03	9.832E 00	1.517E-03
5.626E 01	9.000E-01	1.225E 00	-2.116E 02	-1.360E 03	-6.085E 02	-7.519E 02	3.102E 03	5.838E 00	9.009E-04	7.946E 00	1.226E-03
5.768E 01	2.251E 00	2.251E 00	-1.992E 02	-1.390E 03	-6.244E 02	-7.655E 02	3.209E 03	1.460E 01	2.253E-03	1.460E 01	2.253E-03
5.774E 01	1.625E 00	2.290E 00	-1.986E 02	-1.391E 03	-6.250E 02	-7.660E 02	3.217E 03	1.054E 01	1.627E-03	1.486E 01	2.292E-03
5.788E 01	1.625E 00	2.391E 00	-1.971E 02	-1.394E 03	-6.264E 02	-7.674E 02	3.234E 03	1.054E 01	1.627E-03	1.551E 01	2.393E-03
5.796E 01	2.448E 00	2.448E 00	-1.961E 02	-1.395E 03	-6.272E 02	-7.683E 02	3.245E 03	1.588E 01	2.451E-03	1.588E 01	2.451E-03
5.824E 01	2.650E 00	2.650E 00	-1.928E 02	-1.401E 03	-6.298E 02	-7.711E 02	3.280E 03	1.719E 01	2.653E-03	1.719E 01	2.653E-03
5.846E 01	2.376E 00	2.376E 00	-1.903E 02	-1.405E 03	-6.319E 02	-7.733E 02	3.309E 03	1.541E 01	2.379E-03	1.541E 01	2.379E-03
5.919E 01	1.500E 00	1.500E 00	-1.851E 02	-1.419E 03	-6.381E 02	-7.806E 02	3.402E 03	9.730E 00	1.502E-03	9.730E 00	1.502E-03
6.021E 01	2.050E 00	2.050E 00	-1.810E 02	-1.435E 03	-6.455E 02	-7.896E 02	3.532E 03	1.330E 01	2.052E-03	1.330E 01	2.052E-03
6.222E 01	1.175E 00	1.175E 00	-1.806E 02	-1.459E 03	-6.563E 02	-8.024E 02	3.790E 03	7.622E 00	1.176E-03	7.622E 00	1.176E-03
6.364E 01	1.337E 00	1.337E 00	-1.806E 02	-1.471E 03	-6.616E 02	-8.096E 02	3.972E 03	8.676E 00	1.339E-03	8.676E 00	1.339E-03
6.610E 01	1.323E 00	1.323E 00	-1.806E 02	-1.490E 03	-6.682E 02	-8.215E 02	4.289E 03	8.585E 00	1.325E-03	8.585E 00	1.325E-03
6.648E 01	1.250E 00	1.321E 00	-1.806E 02	-1.492E 03	-6.689E 02	-8.232E 02	4.337E 03	8.108E 00	1.251E-03	8.571E 00	1.323E-03

READING = 0088 BLOCK = 141 TIME = 245.401 MACH 7.2 PT = 996.999 TT = 3175.1

XABS	P-IR	P-OR	PDA	QOX	Q-IR	Q-OR	CAMALL	P-IR/PS0	P-IR/PT0	P-OR/PS0	P-OR/PT0
6.652E 01	1.250E 00	1.321E 00	-1.906E 02	-1.492E 03	-6.690E 02	-8.235E 02	4.342E 03	8.108E 00	1.251E-03	6.570E 00	1.322E-03
6.672E 01	1.223E 00	1.320E 00	-1.806E 02	-1.494E 03	-6.693E 02	-8.222E 02	4.368E 03	7.934E 00	1.224E-03	8.562E 00	1.321E-03
6.838E 01	1.000E 00	1.150E 00	-1.674E 02	-1.505E 03	-6.725E 02	-8.326E 02	4.585E 03	6.487E 00	1.001E-03	7.460E 00	1.151E-03
6.905E 01	9.442E-01	1.447E 00	-1.444E 02	-1.511E 03	-6.740E 02	-8.366E 02	4.665E 03	6.124E 00	9.451E-04	9.389E 00	1.449E-03
6.982E 01	8.800E-01	1.201E 00	-1.141E 02	-1.518E 03	-6.757E 02	-8.420E 02	4.760E 03	5.708E 00	8.809E-04	7.789E 00	1.202E-03
7.054E 01	7.928E-01	9.700E-01	-8.974E 01	-1.526E 03	-6.775E 02	-8.482E 02	4.848E 03	4.883E 00	7.535E-04	6.292E 00	9.710E-04
7.115E 01	6.450E-01	9.475E-01	-7.193E 01	-1.532E 03	-6.790E 02	-8.527E 02	4.922E 03	4.184E 00	6.456E-04	6.146E 00	9.484E-04
7.253E 01	5.500E-01	8.965E-01	-3.772E 01	-1.539E 03	-6.825E 02	-8.562E 02	5.088E 03	3.568E 00	5.506E-04	5.815E 00	8.974E-04
7.406E 01	4.271E-01	8.400E-01	-6.019E 00	-1.546E 03	-6.858E 02	-8.617E 02	5.273E 03	2.770E 00	4.275E-04	5.449E 00	8.408E-04
7.421E 01	4.150E-01	7.333E-01	-3.907E 00	-1.549E 03	-6.861E 02	-8.628E 02	5.290E 03	2.692E 00	4.154E-04	4.757E 00	7.341E-04
7.496E 01	4.655E-01	2.000E-01	1.161E 01	-1.557E 03	-6.874E 02	-8.696E 02	5.374E 03	3.019E 00	4.659E-04	1.297E 00	2.002E-04
7.496E 01	4.657E-01	1.971E-01	1.201E 01	-1.557E 03	-6.874E 02	-8.696E 02	5.375E 03	3.021E 00	4.662E-04	1.279E 00	1.973E-04
7.629E 01	5.550E-01	0.000	2.279E 01	-1.573E 03	-6.893E 02	-8.839E 02	5.426E 03	3.600E 00	5.556E-04	0.000	0.000
7.914E 01	1.650E-01	0.000	3.719E 01	-1.576E 03	-6.922E 02	-8.837E 02	5.525E 03	1.070E 00	1.652E-04	0.000	0.000
8.304E 01	1.800E-01	0.000	4.456E 01	-1.528E 03	-6.943E 02	-8.340E 02	5.630E 03	1.168E 00	1.802E-04	0.000	0.000
8.585E 01	2.250E-01	0.000	4.906E 01	-1.530E 03	-6.958E 02	-8.340E 02	5.684E 03	1.459E 00	2.282E-04	0.000	0.000
8.871E 01	2.950E-01	0.000	5.533E 01	-1.533E 03	-6.985E 02	-8.340E 02	5.707E 03	1.914E 00	2.953E-04	0.000	0.000
8.871E 01	2.951E-01	0.000	5.533E 01	-1.533E 03	-6.985E 02	-8.340E 02	5.707E 03	1.915E 00	2.954E-04	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.401E 01	8.401E 01	2.265E-03	3.447E-02
4.041E 01	1.666E-01	8.417E 01	2.707E-03	3.262E-02
4.075E 01	5.724E 00	8.990E 01	2.410E-03	3.876E-02
4.124E 01	7.823E 00	9.772E 01	2.389E-03	2.974E-02
4.150E 01	4.204E 00	1.019E 02	2.425E-03	3.065E-02
4.246E 01	1.543E 01	1.174E 02	2.574E-03	2.020E-02
4.272E 01	4.555E 00	1.219E 02	3.021E-03	1.964E-02
4.273E 01	1.720E-01	1.221E 02	2.698E-03	2.121E-02
4.280E 01	1.070E 00	1.232E 02	2.647E-03	2.157E-02
4.431E 01	2.322E 01	1.464E 02	2.666E-03	2.910E-02
4.480E 01	7.015E 00	1.534E 02	2.685E-03	3.127E-02
4.552E 01	1.010E 01	1.635E 02	2.707E-03	3.265E-02
4.623E 01	9.899E 00	1.734E 02	2.707E-03	3.265E-02
4.626E 01	3.823E-01	1.738E 02	2.707E-03	3.265E-02
4.731E 01	1.383E 01	1.876E 02	2.690E-03	2.897E-02
4.811E 01	9.801E 00	1.974E 02	2.656E-03	2.350E-02
4.876E 01	7.216E 00	2.046E 02	2.614E-03	2.497E-02
5.021E 01	1.407E 01	2.187E 02	2.644E-03	1.847E-02
5.074E 01	4.498E 00	2.232E 02	2.516E-03	1.670E-02
5.215E 01	1.047E 01	2.336E 02	2.441E-03	1.516E-02
5.425E 01	1.320E 01	2.468E 02	2.437E-03	8.303E-03
5.475E 01	2.820E 00	2.496E 02	2.378E-03	8.740E-03
5.550E 01	3.988E 00	2.536E 02	2.370E-03	7.262E-03
5.576E 01	1.356E 00	2.550E 02	2.374E-03	6.725E-03
5.626E 01	1.194E 00	2.562E 02	2.332E-03	4.868E-03
5.768E 01	3.274E 00	2.594E 02	2.477E-03	8.064E-03
5.774E 01	2.007E-01	2.596E 02	2.309E-03	7.565E-03
5.788E 01	4.858E-01	2.601E 02	2.284E-03	7.745E-03
5.796E 01	2.780E-01	2.604E 02	2.316E-03	8.899E-03
5.824E 01	9.757E-01	2.614E 02	2.357E-03	9.310E-03
5.846E 01	8.043E-01	2.622E 02	2.411E-03	8.450E-03
5.919E 01	2.584E 00	2.648E 02	2.286E-03	6.143E-03
6.021E 01	3.505E 00	2.683E 02	2.251E-03	7.783E-03
6.222E 01	6.979E 00	2.752E 02	2.240E-03	5.153E-03
6.364E 01	5.134E 00	2.804E 02	2.241E-03	5.674E-03
6.610E 01	8.818E 00	2.892E 02	2.290E-03	5.575E-03
6.648E 01	1.323E 00	2.905E 02	2.481E-03	5.222E-03
6.652E 01	1.140E-01	2.906E 02	2.301E-03	5.279E-03
6.672E 01	4.425E-01	2.911E 02	2.298E-03	5.234E-03
6.838E 01	3.512E 00	2.946E 02	2.259E-03	4.600E-03
6.905E 01	1.299E 00	2.959E 02	2.274E-03	4.971E-03
6.982E 01	1.489E 00	2.974E 02	2.245E-03	4.473E-03
7.054E 01	1.240E 00	2.986E 02	2.208E-03	3.879E-03
7.115E 01	9.540E-01	2.996E 02	2.193E-03	3.655E-03
7.253E 01	2.021E 00	3.016E 02	2.172E-03	3.343E-03
7.406E 01	2.069E 00	3.037E 02	2.141E-03	3.061E-03
7.421E 01	1.787E-01	3.038E 02	2.124E-03	2.843E-03
7.496E 01	7.116E-01	3.045E 02	2.032E-03	1.806E-03
7.496E 01	1.113E-03	3.045E 02	2.032E-03	1.881E-03
7.629E 01	4.297E-01	3.050E 02	2.110E-03	2.760E-03
7.914E 01	6.709E-01	3.056E 02	1.910E-03	1.105E-03
8.304E 01	4.484E-01	3.061E 02	1.909E-03	1.170E-03
8.585E 01	2.593E-01	3.064E 02	1.933E-03	1.376E-03
8.871E 01	1.279E-01	3.065E 02	1.965E-03	1.678E-03
8.871E 01	0.000	3.065E 02	1.965E-03	1.679E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-267.	(LBF)
MEASURED THRUST	-224.	(LBF)
CALCULATED SPECIFIC IMPULSE	-1908.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-1604.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.1843	
MEASURED THRUST COEFFICIENT	-.1550	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	2760.	(LBF)
NET THRUST	-143.	(LBF)
SPECIFIC IMPULSE	-1023.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.0988	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.0	(LBF)
INLET MOMENTUM CHANGE	-397.9	(LBF)
COMBUSTOR FRICTION DRAG	206.5	(LBF)
COMBUSTOR STRUT DRAG	15.76	(LBF)
COMBUSTOR MOMENTUM CHANGE	-89.	(LBF)
NOZZLE FRICTION DRAG	15.97	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	220.	(LBF)
NOZZLE PRESSURE INTEGRAL	236.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-724.	(LBF)
TOTAL STRUT DRAG	15.76	(LBF)
CAVITY FORCE	-528.	(LBF)
CALCULATED LOAD CELL FORCE	-1519.	(LBF)
MEASURED LOAD CELL FORCE	-1476.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0,	

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9888	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1012	
DELTA PT2	0.0892	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3269	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1025	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9029	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9125	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9362	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8863	
ENTHALPY AT PO - SUPERSONIC	-30.46	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	8.33	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0094
EQUIVALENCE RATIO	0.301
COMBUSTOR EFFICIENCY	0.011
TOTAL PRESSURE RATIO	0.1376
COMBUSTOR EFFECTIVENESS	0.1638
INJECTOR DISCHARGE COEFFICIENTS	0.9194, 0.6339,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9946
NOZZLE COEFFICIENT - CT	0.9578
PROCESS EFFICIENCY	0.9653
KINETIC ENERGY EFFICIENCY	0.9888

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7369	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.621	(IN)
NOZZLE SHROUD TRAILING EDGE	74.961	(IN)
NOZZLE PLUG TRAILING EDGE	88.713	(IN)
STRUT LEADING EDGE	57.477	(IN)
STRUT TRAILING EDGE	66.477	(IN)
COMBUSTOR EXIT	66.477	(IN)

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.000	4
1B	42.722	8
1C	44.300	
2A	50.197	
2C	46.250	
3A	55.487	
3B	57.672	
D	46.222	

Reading 88

t = 261.60 sec.

Combustor pressure distributions indicate the injected fuel did not ignite.

2/12/75

RAMJET PERFORMANCE

S U M M A R Y R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	R	F/A	A	A/AC	MOMTM	C	IVAC	PHI	ETAB
WIND TUNNEL		1	0 6														
0.000	998.749	3250	746.8(870)	1.2857	28.903	2681											
0.000	0.154	318	-52.8(76)	1.3970	28.901	874	7.238	6325	1.832	0.05719	14.469	0.9878	2883	5.621	199.3		
SPIKE TIP NS		2	0 6														
0.600	11.375	3249	746.8(869)	1.2848	28.901	2680											
0.600	10.526	3194	729.6(853)	1.2866	28.901	2659	0.349	928	2.140	0.05719	14.469	0.9878	3080	0.824	212.9		
WIND TUNNEL		3	0 0														
0.000	998.749	3250	746.8(870)	1.2857	28.903	2681											
0.000	0.172	328	-50.3(79)	1.3973	28.901	888	7.111	6315	1.832	0.06187	15.653	0.9878	3116	6.072	199.1		
SPIKE TIP NS		4	0 0														
0.600	11.375	3249	746.8(869)	1.2848	28.901	2680											
0.600	10.362	3183	726.1(850)	1.2870	28.901	2654	0.383	1016	2.140	0.06187	15.653	0.9878	3116	0.977	199.1		
INLET THROAT		5	0 3														
40.400	336.673	3143	713.9(838)	1.2889	28.902	2640											
40.400	10.119	1336	199.2(328)	1.3580	28.901	1767	2.873	5075	1.897	0.71889	14.469	0.0786	2486	56.696	171.8		
INLET UPNRSK		6	0 3														
40.400	336.673	3143	713.9(838)	1.2889	28.902	2640											
40.400	8.737	1285	186.0(315)	1.3612	28.901	1735	2.963	5140	1.897	0.65354	14.469	0.0864	2505	52.200	173.1		
INLET DNNRSK		7	0 4														
40.400	101.610	3143	713.9(838)	1.2888	28.902	2640											
40.400	88.754	3049	685.1(810)	1.2917	28.902	2603	0.461	1200	1.979	0.65354	14.469	0.0864	2505	18.191	173.1		
COMBUSTOR	0	8	1 21														
40.410	241.616	3076	721.7(881)	1.2928	26.760	2718											
40.410	10.493	1428	217.0(380)	1.3546	26.759	1896	2.651	5026	2.039	0.72331	14.560	0.0786	2485	56.492	170.7	0.20	0.07
COMBUSTOR	0	9	2 3														
40.745	249.759	3030	719.6(866)	1.2949	26.717	2702											
40.745	12.406	1453	236.6(388)	1.3537	26.717	1913	2.570	4916	2.033	0.72599	14.560	0.0783	2473	55.464	169.9	0.20	0.04
COMBUSTOR	0	10	3 21														
41.235	225.603	2989	716.3(854)	1.2967	26.683	2687											
41.235	8.578	1332	212.4(354)	1.3608	26.683	1838	2.733	5022	2.036	0.72022	14.560	0.0789	2446	56.205	168.0	0.20	0.01
COMBUSTOR	0	11	4 21														
41.500	208.879	2979	714.5(851)	1.2971	26.678	2683											
41.500	9.097	1375	226.0(366)	1.3584	26.678	1866	2.650	4944	2.001	0.71332	14.560	0.0797	2423	54.808	166.4	0.20	0.00
COMBUSTOR	0	12	5 21														
42.460	129.618	2956	707.6(840)	1.2978	26.678	2674											
42.460	4.883	1312	208.5(348)	1.3620	26.677	1825	2.739	4997	2.074	0.67221	14.560	0.0846	2367	52.205	162.6	0.20	0.00
COMBUSTOR	0	13	6 21														
42.720	95.115	2904	714.7(885)	1.3011	24.861	2749											
42.720	5.154	1410	229.2(403)	1.3581	24.861	1957	2.519	4929	2.213	0.66824	14.651	0.0856	2357	51.184	160.9	0.41	0.04
COMBUSTOR	0	14	7 21														
42.730	104.199	2843	714.6(865)	1.3039	24.801	2726											
42.730	5.165	1342	229.4(383)	1.3624	24.801	1914	2.574	4927	2.199	0.66761	14.651	0.0857	2357	51.120	160.9	0.41	0.01
COMBUSTOR	0	15	8 21														
42.795	105.534	2832	714.1(862)	1.3044	24.792	2722											
42.795	5.233	1336	230.8(381)	1.3628	24.792	1911	2.574	4918	2.197	0.66597	14.651	0.0859	2355	50.900	160.7	0.41	0.00
COMBUSTOR	0	16	9 21														
44.310	118.471	2803	704.6(852)	1.3054	24.790	2709											
44.310	9.970	1518	286.6(437)	1.3531	24.790	2030	2.253	4573	2.184	0.61585	14.651	0.0929	2320	43.771	158.3	0.41	0.00
COMBUSTOR	0	17	10 21														
44.800	119.123	2795	702.1(850)	1.3056	24.790	2706											
44.800	11.502	1569	302.3(452)	1.3565	24.790	2061	2.170	4473	2.183	0.60821	14.651	0.0940	2314	42.279	157.9	0.41	0.00
COMBUSTOR	0	18	11 21														
45.515	114.048	2831	698.6(861)	1.3038	24.835	2718											
45.515	12.767	1654	313.2(478)	1.3459	24.835	2111	2.080	4392	2.190	0.60370	14.651	0.0948	2310	41.201	157.6	0.41	0.02

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	*/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.230	118.333	2782	695.1(845)	1.3059	24.797	2699											
46.230	11.662	1569	300.0(452)	1.3504	24.797	2061	2.157	4447	2.181	0.58685	14.651	0.0975	2316	40.554	158.1	0.41	0.00
COMBUSTOR	0	20	13 21														
46.260	119.049	2778	695.0(843)	1.3062	24.791	2696											
46.260	11.616	1561	299.5(450)	1.3509	24.791	2056	2.163	4449	2.180	0.58543	14.651	0.0977	2317	40.476	158.1	0.41	0.00
COMBUSTOR	0	21	14 21														
47.310	116.918	2760	689.9(838)	1.3068	24.790	2689											
47.310	9.993	1498	280.5(431)	1.3541	24.790	2017	2.244	4526	2.180	0.54277	14.651	0.1054	2331	38.177	159.1	0.41	0.00
COMBUSTOR	0	22	15 21														
48.110	110.731	2748	686.1(834)	1.3071	24.790	2684											
48.110	7.073	1381	245.0(395)	1.3603	24.790	1941	2.420	4698	2.183	0.49879	14.651	0.1147	2347	36.418	160.2	0.41	0.00
COMBUSTOR	0	23	16 21														
48.755	103.408	2793	683.0(848)	1.3049	24.843	2701											
48.755	7.275	1444	246.0(413)	1.3564	24.842	1980	2.361	4676	2.193	0.45293	14.651	0.1263	2365	32.912	161.4	0.41	0.03
COMBUSTOR	0	24	17 21														
50.205	104.870	2729	676.9(827)	1.3076	24.798	2675											
50.205	5.816	1320	223.9(376)	1.3636	24.798	1900	2.506	4761	2.185	0.36808	14.651	0.1554	2400	27.235	163.8	0.41	0.00
COMBUSTOR	0	25	18 21														
50.735	104.269	2717	675.1(824)	1.3081	24.791	2670											
50.735	5.283	1282	214.7(365)	1.3658	24.791	1874	2.561	4800	2.184	0.34424	14.651	0.1662	2411	25.676	164.5	0.41	0.00
COMBUSTOR	0	26	19 21														
52.145	100.126	2704	670.9(819)	1.3086	24.790	2664											
52.145	4.050	1200	190.5(341)	1.3705	24.790	1816	2.700	4903	2.185	0.29339	14.651	0.1950	2435	22.353	166.2	0.41	0.00
COMBUSTOR	0	27	20 21														
54.245	79.907	2678	663.1(814)	1.3094	24.685	2657											
54.245	1.950	1034	140.6(293)	1.3797	24.685	1695	3.017	5113	2.208	0.24124	14.698	0.2379	2455	19.170	167.0	0.42	0.00
COMBUSTOR	0	28	21 21														
54.745	84.603	2670	662.0(811)	1.3097	24.681	2654											
54.745	2.333	1065	151.4(302)	1.3780	24.681	1720	2.940	5055	2.202	0.23138	14.698	0.2480	2457	18.177	167.2	0.42	0.00
COMBUSTOR	0	29	22 21														
55.495	77.898	2665	660.5(809)	1.3099	24.680	2652											
55.495	1.795	1012	135.9(287)	1.3809	24.680	1678	3.054	5123	2.208	0.21811	14.698	0.2631	2462	17.367	167.5	0.42	0.00
COMBUSTOR	0	30	23 21														
55.760	74.625	2663	659.9(809)	1.3100	24.680	2651											
55.760	1.605	992	130.1(281)	1.3819	24.679	1662	3.099	5149	2.211	0.21381	14.698	0.2684	2463	17.108	167.5	0.42	0.00
COMBUSTOR	0	31	24 21														
56.255	42.570	2802	659.0(853)	1.3035	24.817	2705											
56.255	1.047	1095	113.3(310)	1.3752	24.817	1737	3.008	5225	2.271	0.16874	14.698	0.3401	2478	13.703	168.6	0.42	0.07
COMBUSTOR	0	32	25 4														
57.680	63.368	2714	656.7(825)	1.3075	24.738	2671											
57.680	2.294	1171	162.5(335)	1.3716	24.736	1796	2.768	4972	2.230	0.15596	14.698	0.3679	2488	12.052	169.3	0.42	0.03
COMBUSTOR	0	33	26 21														
57.735	70.211	2662	656.6(808)	1.3099	24.689	2650											
57.735	1.967	1066	149.0(303)	1.3779	24.688	1720	2.930	5040	2.216	0.15555	14.698	0.3689	2488	12.183	169.3	0.42	0.00
COMBUSTOR	0	34	27 21														
57.875	71.467	2654	656.4(806)	1.3103	24.681	2647											
57.875	2.018	1065	151.0(302)	1.3780	24.681	1719	2.925	5028	2.214	0.15443	14.698	0.3716	2489	12.068	169.4	0.42	0.00
COMBUSTOR	0	35	28 5														
57.955	57.159	2777	656.2(845)	1.3046	24.801	2695											
57.955	2.495	1266	169.3(361)	1.3657	24.801	1862	2.651	4936	2.245	0.15613	14.698	0.3675	2490	11.977	169.4	0.42	0.06
COMBUSTOR	0	36	29 4														
58.235	51.601	2844	655.8(867)	1.3014	24.868	2720											
58.235	2.700	1367	176.7(390)	1.3594	24.868	1928	2.540	4896	2.259	0.15562	14.698	0.3688	2492	11.841	169.5	0.42	0.10
COMBUSTOR	0	37	30 4														
58.461	59.087	2763	655.4(841)	1.3052	24.789	2689											
58.461	2.415	1236	164.4(352)	1.3675	24.789	1841	2.692	4957	2.240	0.15532	14.698	0.3695	2493	11.965	169.6	0.42	0.06

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READING = 0088  BLOCK = 159  TIME = 261.601  MACH  7.2  PT = 998.749  TT = 5249.R

              P      T      H             GAMMA  MOLWT SONV  MACH  VEL   8      W/A     W      A/AC    MOMTM  G     IVAC  PHI  ETAC
COMBUSTOR     0    38    31   21
59.185     69.054 2660   654.3( 809) 1.3097 24.696 2650
59.185      1.500  995   125.5( 282) 1.3816 24.696 1664 3.092 5144 2.218 0.15291 14.698 0.3755   2490 12.224 169.7 0.42 0.01
COMBUSTOR     0    39    32    2
60.205     69.727 2667   652.9( 810) 1.3095 24.704 2651
60.205      2.050 1083   148.8( 307) 1.3768 24.703 1733 2.899 5023 2.217 0.15194 14.698 0.3777   2493 11.860 169.6 0.42 0.01
COMBUSTOR     0    40    33   21
62.215     65.741 2643   650.6( 801) 1.3107 24.683 2640
62.215      1.075  918   107.4( 259) 1.3857 24.683 1600 3.258 5214 2.221 0.15723 14.698 0.3650   2482 12.740 168.9 0.42 0.00
COMBUSTOR     0    41    34   21
63.635     69.476 2633   649.3( 799) 1.3110 24.680 2637
63.635      1.456  971   124.0( 275) 1.3830 24.680 1645 3.116 5127 2.213 0.16149 14.698 0.3553   2475 12.866 168.4 0.42 0.00
COMBUSTOR     0    42    35   21
66.099     61.854 2625   646.8( 796) 1.3112 24.680 2633
66.099      1.341  977   125.9( 277) 1.3827 24.680 1650 3.095 5106 2.222 0.15307 14.698 0.3709   2461 12.146 167.5 0.42 0.00
COMBUSTOR     0    43    36   21
66.475     57.512 2624   646.5( 796) 1.3113 24.680 2633
66.475      1.287  985   128.3( 279) 1.3822 24.679 1656 3.074 5092 2.227 0.14231 14.698 0.4032   2459 11.262 167.3 0.42 0.00
COMBUSTOR  REGEN   44    37    4
66.475     57.512 2865   729.2( 877) 1.3035 24.680 2743
66.475      2.214 1265   210.9( 362) 1.3669 24.680 1866 2.728 5092 2.257 0.14231 14.698 0.4032   2555 11.262 173.8 0.42 0.00
NOZZLE  AE         45    38    3
88.711     57.512 2624   646.5( 794) 1.3113 24.680 2633
88.711      0.189  574    10.4( 161) 1.3988 24.680 1271 4.437 5642 2.227 0.02962 14.698 1.9372   2671  2.597 181.7 0.42 0.00
NOZZLE  PO         46    39    3
88.711     57.512 2624   646.5( 794) 1.3113 24.680 2633
88.711      0.154  541     1.2( 152) 1.3994 24.680 1235 4.601 5682 2.227 0.02577 14.698 2.2270   2683  2.275 182.6 0.42 0.00
NOZZLE  AE REGEN   47    40    4
88.711     57.512 2865   729.2( 877) 1.3035 24.680 2743
88.711      0.206  654    33.1( 184) 1.3966 24.680 1356 4.351 5902 2.257 0.02962 14.698 1.9371   2798  2.717 190.4 0.42 0.00
NOZZLE  PO REGEN   48    41    4
88.711     57.512 2865   729.2( 877) 1.3035 24.680 2743
88.711      0.154  602    18.5( 169) 1.3961 24.680 1302 4.580 5964 2.257 0.02430 14.698 2.3611   2817  2.252 191.7 0.42 0.00
FICTIVE COMBUSTR   67    60    0
66.475    336.673 4478   646.5(1400) 1.2217 26.718 3191
66.475      0.154  736  -609.3( 196) 1.3791 26.786 1373 5.774 7927 2.202 0.02867 14.698 2.0018   3700  3.532 251.7 0.42 1.00
FICTIVE NOZZLE     68    61    0
88.711    138.004 2586   633.7( 783) 1.3125 24.680 2615
88.711      0.124  390   -41.4( 109) 1.4009 24.680 1049 5.542 5812 2.152 0.02962 14.698 1.9371   2717  2.676 184.8 0.42 0.00
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XABS	P-IR	P-OB	PDA	DOX	Q-IR	Q-CB	C-WALL	P-TH/PSO	P-IR/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.747E-01	0.000	0.000	0.000	2.470E-02	4.491E 00	6.909E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.491E 00	6.909E-04	0.000	0.000
3.070E 01	1.015E 00	0.000	-9.208E 01	0.000	0.000	0.000	5.053E 02	6.607E 00	1.016E-03	0.000	0.000
3.508E 01	1.875E 00	0.000	-1.857E 02	0.000	0.000	0.000	6.804E 02	1.221E 01	1.877E-03	0.000	0.000
3.555E 01	2.105E 00	0.000	-2.039E 02	0.000	0.000	0.000	7.013E 02	1.370E 01	2.108E-03	0.000	0.000
3.606E 01	2.065E 00	0.000	-2.250E 02	-2.365E 02	-2.365E 02	0.000	7.246E 02	1.344E 01	2.068E-03	0.000	0.000
3.648E 01	2.260E 00	0.000	-2.435E 02	-2.423E 02	-2.423E 02	0.000	7.443E 02	1.471E 01	2.263E-03	0.000	0.000
3.661E 01	2.295E 00	3.255E 00	-2.434E 02	-2.441E 02	-2.441E 02	0.000	7.506E 02	1.494E 01	2.298E-03	2.119E 01	3.260E-03
3.662E 01	2.297E 00	3.271E 00	-2.835E 02	-2.442E 02	-2.442E 02	0.000	7.508E 02	1.495E 01	2.300E-03	2.129E 01	3.275E-03
3.701E 01	2.400E 00	4.279E 00	-2.855E 02	-2.498E 02	-2.498E 02	0.000	7.914E 02	1.562E 01	2.403E-03	2.785E 01	4.284E-03
3.728E 01	2.292E 00	4.987E 00	-2.853E 02	-2.539E 02	-2.539E 02	0.000	8.203E 02	1.492E 01	2.295E-03	3.247E 01	4.994E-03
3.803E 01	2.000E 00	8.365E 00	-2.687E 02	-2.656E 02	-2.656E 02	0.000	9.005E 02	1.302E 01	2.003E-03	5.445E 01	8.376E-03
3.874E 01	6.487E 00	1.161E 01	-2.652E 02	-3.358E 02	-2.797E 02	-5.609E 01	9.801E 02	4.222E 01	6.495E-03	7.555E 01	1.162E-02
3.875E 01	6.518E 00	1.159E 01	-2.652E 02	-3.362E 02	-2.799E 02	-5.636E 01	9.807E 02	4.243E 01	6.527E-03	7.544E 01	1.160E-02
3.901E 01	8.150E 00	1.069E 01	-2.691E 02	-3.561E 02	-2.862E 02	-6.983E 01	1.010E 03	5.305E 01	8.160E-03	6.960E 01	1.071E-02
3.950E 01	1.123E 01	9.001E 00	-2.858E 02	-3.955E 02	-3.004E 02	-9.515E 01	1.066E 03	7.313E 01	1.125E-02	5.859E 01	9.013E-03
3.976E 01	1.093E 01	8.087E 00	-2.954E 02	-4.181E 02	-3.093E 02	-1.088E 02	1.097E 03	7.116E 01	1.095E-02	5.264E 01	8.098E-03
4.000E 01	1.066E 01	7.775E 00	-3.018E 02	-4.388E 02	-3.180E 02	-1.209E 02	1.124E 03	6.941E 01	1.068E-02	5.061E 01	7.785E-03
4.023E 01	1.152E 01	7.462E 00	-3.087E 02	-4.601E 02	-3.272E 02	-1.329E 02	1.151E 03	7.500E 01	1.154E-02	4.858E 01	7.472E-03
4.040E 01	1.213E 01	8.745E 00	-3.134E 02	-4.753E 02	-3.340E 02	-1.414E 02	1.171E 03	7.893E 01	1.214E-02	5.693E 01	8.756E-03
4.041E 01	1.216E 01	8.823E 00	-3.136E 02	-4.763E 02	-3.344E 02	-1.419E 02	1.172E 03	7.917E 01	1.218E-02	5.743E 01	8.834E-03
4.074E 01	1.339E 01	1.142E 01	-3.198E 02	-5.077E 02	-3.487E 02	-1.590E 02	1.211E 03	8.715E 01	1.340E-02	7.437E 01	1.144E-02
4.123E 01	1.518E 01	1.975E 00	-3.395E 02	-5.549E 02	-3.713E 02	-1.836E 02	1.269E 03	9.881E 01	1.520E-02	1.286E 01	1.977E-03
4.150E 01	1.615E 01	2.043E 00	-3.580E 02	-5.811E 02	-3.844E 02	-1.967E 02	1.300E 03	1.051E 02	1.617E-02	1.330E 01	2.046E-03
4.246E 01	7.475E 00	2.292E 00	-3.983E 02	-6.825E 02	-4.326E 02	-2.499E 02	1.414E 03	4.866E 01	7.484E-03	1.492E 01	2.294E-03
4.272E 01	7.950E 00	2.359E 00	-4.034E 02	-7.109E 02	-4.449E 02	-2.661E 02	1.445E 03	5.175E 01	7.960E-03	1.535E 01	2.362E-03
4.273E 01	7.968E 00	2.361E 00	-4.036E 02	-7.120E 02	-4.453E 02	-2.667E 02	1.446E 03	5.187E 01	7.978E-03	1.537E 01	2.364E-03
4.279E 01	8.087E 00	2.378E 00	-4.049E 02	-7.189E 02	-4.482E 02	-2.707E 02	1.454E 03	5.264E 01	8.097E-03	1.548E 01	2.381E-03
4.431E 01	1.085E 01	9.085E 00	-4.162E 02	-8.584E 02	-4.985E 02	-3.599E 02	1.637E 03	7.066E 01	1.087E-02	5.914E 01	9.096E-03
4.480E 01	1.175E 01	1.125E 01	-4.151E 02	-8.951E 02	-5.078E 02	-3.873E 02	1.696E 03	7.649E 01	1.176E-02	7.326E 01	1.127E-02
4.551E 01	1.112E 01	1.442E 01	-4.095E 02	-9.463E 02	-5.190E 02	-4.273E 02	1.783E 03	7.236E 01	1.113E-02	9.386E 01	1.444E-02
4.623E 01	1.048E 01	1.284E 01	-3.934E 02	-9.973E 02	-5.299E 02	-4.673E 02	1.871E 03	6.823E 01	1.050E-02	8.360E 01	1.286E-02
4.626E 01	1.046E 01	1.278E 01	-3.924E 02	-9.994E 02	-5.304E 02	-4.690E 02	1.875E 03	6.806E 01	1.047E-02	8.316E 01	1.279E-02
4.731E 01	9.525E 00	1.046E 01	-3.646E 02	-1.074E 03	-5.462E 02	-5.276E 02	2.004E 03	6.200E 01	9.537E-03	6.809E 01	1.047E-02
4.811E 01	5.450E 00	8.697E 00	-3.384E 02	-1.130E 03	-5.580E 02	-5.723E 02	2.103E 03	3.548E 01	5.457E-03	5.661E 01	8.708E-03
4.875E 01	7.275E 00	7.275E 00	-3.139E 02	-1.176E 03	-5.674E 02	-6.084E 02	2.183E 03	4.736E 01	7.284E-03	4.736E 01	7.284E-03
5.020E 01	5.816E 00	5.816E 00	-2.649E 02	-1.265E 03	-5.881E 02	-6.768E 02	2.365E 03	3.786E 01	5.824E-03	3.786E 01	5.824E-03
5.073E 01	5.283E 00	5.283E 00	-2.496E 02	-1.291E 03	-5.955E 02	-6.953E 02	2.431E 03	3.439E 01	5.290E-03	3.439E 01	5.290E-03
5.214E 01	4.050E 00	4.050E 00	-2.151E 02	-1.353E 03	-6.147E 02	-7.381E 02	2.609E 03	2.636E 01	4.055E-03	2.636E 01	4.055E-03
5.424E 01	1.950E 00	1.950E 00	-1.821E 02	-1.430E 03	-6.423E 02	-7.880E 02	2.875E 03	1.269E 01	1.952E-03	1.269E 01	1.952E-03
5.474E 01	2.333E 00	2.333E 00	-1.765E 02	-1.446E 03	-6.487E 02	-7.971E 02	2.939E 03	1.519E 01	2.336E-03	1.519E 01	2.336E-03
5.549E 01	1.795E 00	1.795E 00	-1.685E 02	-1.468E 03	-6.581E 02	-8.102E 02	3.035E 03	1.169E 01	1.797E-03	1.169E 01	1.797E-03
5.576E 01	1.605E 00	1.605E 00	-1.662E 02	-1.476E 03	-6.614E 02	-8.147E 02	3.068E 03	1.045E 01	1.607E-03	1.045E 01	1.607E-03
5.625E 01	8.437E-01	1.250E 00	-1.492E 02	-1.490E 03	-6.666E 02	-8.230E 02	3.102E 03	5.492E 00	8.448E-04	8.137E 00	1.252E-03
5.768E 01	2.294E 00	2.294E 00	-1.366E 02	-1.524E 03	-6.785E 02	-8.458E 02	3.209E 03	1.493E 01	2.296E-03	1.493E 01	2.296E-03
5.773E 01	1.600E 00	2.334E 00	-1.359E 02	-1.526E 03	-6.790E 02	-8.466E 02	3.217E 03	1.042E 01	1.602E-03	1.519E 01	2.337E-03
5.787E 01	1.600E 00	2.436E 00	-1.344E 02	-1.529E 03	-6.801E 02	-8.488E 02	3.234E 03	1.042E 01	1.602E-03	1.586E 01	2.439E-03
5.795E 01	2.495E 00	2.495E 00	-1.334E 02	-1.531E 03	-6.807E 02	-8.500E 02	3.245E 03	1.624E 01	2.498E-03	1.624E 01	2.498E-03
5.823E 01	2.700E 00	2.700E 00	-1.300E 02	-1.537E 03	-6.829E 02	-8.542E 02	3.280E 03	1.758E 01	2.703E-03	1.758E 01	2.703E-03
5.846E 01	2.415E 00	2.415E 00	-1.275E 02	-1.542E 03	-6.847E 02	-8.577E 02	3.309E 03	1.572E 01	2.418E-03	1.572E 01	2.418E-03
5.918E 01	1.500E 00	1.500E 00	-1.222E 02	-1.559E 03	-6.901E 02	-8.685E 02	3.402E 03	9.764E 00	1.502E-03	9.764E 00	1.502E-03
6.020E 01	2.050E 00	2.050E 00	-1.181E 02	-1.580E 03	-6.974E 02	-8.823E 02	3.532E 03	1.334E 01	2.053E-03	1.334E 01	2.053E-03
6.221E 01	1.075E 00	1.075E 00	-1.177E 02	-1.613E 03	-7.102E 02	-9.027E 02	3.790E 03	6.998E 00	1.076E-03	6.998E 00	1.076E-03
6.363E 01	1.456E 00	1.456E 00	-1.177E 02	-1.633E 03	-7.179E 02	-9.149E 02	3.972E 03	9.479E 00	1.458E-03	9.479E 00	1.458E-03
6.610E 01	1.341E 00	1.341E 00	-1.177E 02	-1.669E 03	-7.285E 02	-9.401E 02	4.289E 03	8.731E 00	1.343E-03	8.731E 00	1.343E-03
6.647E 01	1.250E 00	1.324E 00	-1.177E 02	-1.674E 03	-7.299E 02	-9.441E 02	4.337E 03	8.137E 00	1.252E-03	8.616E 00	1.325E-03

READING = 0088 BLOCK = 159 TIME = 261.601 MACH 7.2 P1 = 998.759 T1 = 3249.4

XABS	P-IB	P-OB	PDA	DOX	Q-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.651E 01	1.250E 00	1.322E 00	-1.177E 02	-1.675E 03	-7.300E 02	-9.405E 02	4.342E 03	8.137E 00	1.252E-03	8.604E 00	1.323E-03
6.671E 01	1.397E 00	1.312E 00	-1.177E 02	-1.677E 03	-7.307E 02	-9.444E 02	4.368E 03	9.096E 00	1.399E-03	8.544E 00	1.314E-03
6.837E 01	2.620E 00	1.550E 00	-9.932E 01	-1.696E 03	-7.363E 02	-9.594E 02	4.544E 03	1.705E 01	2.623E-03	1.009E 01	1.552E-03
6.904E 01	1.803E 00	1.665E 00	-6.061E 01	-1.702E 03	-7.386E 02	-9.639E 02	4.665E 03	1.174E 01	1.806E-03	1.084E 01	1.667E-03
6.981E 01	8.650E-01	1.306E 00	-2.164E 01	-1.711E 03	-7.414E 02	-9.696E 02	4.760E 03	5.631E 00	8.661E-04	8.500E 00	1.307E-03
7.053E 01	8.623E-01	9.700E-01	4.059E 00	-1.720E 03	-7.440E 02	-9.759E 02	4.848E 03	5.613E 00	8.634E-04	6.314E 00	9.712E-04
7.114E 01	8.600E-01	9.466E-01	2.387E 01	-1.728E 03	-7.463E 02	-9.813E 02	4.922E 03	5.598E 00	8.611E-04	6.162E 00	9.478E-04
7.252E 01	7.100E-01	8.937E-01	6.306E 01	-1.743E 03	-7.515E 02	-9.912E 02	5.088E 03	4.622E 00	7.109E-04	5.817E 00	8.948E-04
7.405E 01	4.641E-01	8.350E-01	9.700E 01	-1.757E 03	-7.565E 02	-1.001E 03	5.273E 03	3.021E 00	4.647E-04	5.435E 00	8.360E-04
7.420E 01	4.400E-01	7.267E-01	9.958E 01	-1.759E 03	-7.569E 02	-1.002E 03	5.290E 03	2.864E 00	4.406E-04	4.730E 00	7.276E-04
7.495E 01	4.851E-01	1.850E-01	1.151E 02	-1.767E 03	-7.588E 02	-1.008E 03	5.374E 03	3.158E 00	4.857E-04	1.204E 00	1.852E-04
7.496E 01	4.853E-01	1.821E-01	1.155E 02	-1.767E 03	-7.588E 02	-1.008E 03	5.375E 03	3.159E 00	4.859E-04	1.185E 00	1.823E-04
7.628E 01	5.650E-01	0.000	1.266E 02	-1.783E 03	-7.616E 02	-1.022E 03	5.426E 03	3.678E 00	5.657E-04	0.000	0.000
7.913E 01	1.450E-01	0.000	1.408E 02	-1.788E 03	-7.657E 02	-1.022E 03	5.525E 03	9.439E-01	1.452E-04	0.000	0.000
8.303E 01	1.750E-01	0.000	1.476E 02	-1.857E 03	-7.686E 02	-1.088E 03	5.630E 03	1.139E 00	1.752E-04	0.000	0.000
8.584E 01	2.450E-01	0.000	1.523E 02	-1.859E 03	-7.704E 02	-1.088E 03	5.684E 03	1.595E 00	2.453E-04	0.000	0.000
8.870E 01	2.950E-01	0.000	1.588E 02	-1.862E 03	-7.736E 02	-1.088E 03	5.707E 03	1.920E 00	2.954E-04	0.000	0.000
8.871E 01	2.951E-01	0.000	1.588E 02	-1.862E 03	-7.736E 02	-1.088E 03	5.707E 03	1.921E 00	2.955E-04	0.000	0.000

ORIGINAL PAGE IS
OF POOR QUALITY

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.463E 01	8.463E 01	2.259E-03	5.366E-02
4.041E 01	1.688E-01	8.480E 01	2.831E-03	5.284E-02
4.074E 01	5.811E 00	9.061E 01	2.464E-03	4.045E-02
4.123E 01	7.914E 00	9.853E 01	2.456E-03	3.083E-02
4.150E 01	4.276E 00	1.028E 02	2.467E-03	3.207E-02
4.246E 01	1.556E 01	1.184E 02	2.628E-03	1.946E-02
4.272E 01	4.701E 00	1.231E 02	3.240E-03	1.894E-02
4.273E 01	1.830E-01	1.232E 02	2.811E-03	2.076E-02
4.279E 01	1.103E 00	1.243E 02	2.738E-03	2.127E-02
4.431E 01	2.353E 01	1.479E 02	2.706E-03	3.328E-02
4.480E 01	6.937E 00	1.548E 02	2.716E-03	3.662E-02
4.551E 01	9.907E 00	1.647E 02	2.724E-03	3.927E-02
4.623E 01	9.786E 00	1.745E 02	2.742E-03	3.643E-02
4.626E 01	4.058E-01	1.749E 02	2.705E-03	3.666E-02
4.731E 01	1.365E 01	1.886E 02	2.656E-03	3.272E-02
4.811E 01	9.724E 00	1.983E 02	2.604E-03	2.532E-02
4.875E 01	7.186E 00	2.055E 02	2.563E-03	2.542E-02
5.020E 01	1.389E 01	2.194E 02	2.535E-03	2.062E-02
5.073E 01	4.388E 00	2.237E 02	2.455E-03	1.927E-02
5.214E 01	1.029E 01	2.340E 02	2.373E-03	1.552E-02
5.424E 01	1.309E 01	2.471E 02	2.362E-03	8.604E-03
5.474E 01	2.774E 00	2.499E 02	2.300E-03	9.931E-03
5.549E 01	3.901E 00	2.538E 02	2.282E-03	8.096E-03
5.576E 01	1.334E 00	2.551E 02	2.281E-03	7.417E-03
5.625E 01	1.163E 00	2.563E 02	2.243E-03	5.110E-03
5.768E 01	3.217E 00	2.595E 02	2.397E-03	6.624E-03
5.773E 01	1.998E-01	2.597E 02	2.283E-03	7.904E-03
5.787E 01	4.848E-01	2.602E 02	2.216E-03	8.182E-03
5.795E 01	2.733E-01	2.609E 02	2.227E-03	9.551E-03
5.823E 01	9.784E-01	2.615E 02	2.379E-03	9.710E-03
5.846E 01	8.261E-01	2.623E 02	2.434E-03	8.795E-03
5.918E 01	2.655E 00	2.649E 02	2.306E-03	6.324E-03
6.020E 01	3.537E 00	2.685E 02	2.188E-03	8.179E-03
6.221E 01	6.941E 00	2.754E 02	2.188E-03	5.054E-03
6.363E 01	5.063E 00	2.805E 02	2.153E-03	6.391E-03
6.610E 01	8.589E 00	2.891E 02	2.192E-03	5.963E-03
6.647E 01	1.246E 00	2.903E 02	2.222E-03	5.746E-03
6.651E 01	1.111E-01	2.904E 02	2.179E-03	5.622E-03
6.671E 01	4.777E-01	2.909E 02	2.187E-03	5.842E-03
6.837E 01	4.709E 00	2.956E 02	2.255E-03	8.002E-03
6.904E 01	1.913E 00	2.975E 02	2.219E-03	6.975E-03
6.981E 01	1.811E 00	2.993E 02	2.133E-03	4.917E-03
7.053E 01	1.352E 00	3.007E 02	2.101E-03	4.325E-03
7.114E 01	1.068E 00	3.018E 02	2.096E-03	4.275E-03
7.252E 01	2.292E 00	3.040E 02	2.071E-03	3.900E-03
7.405E 01	2.268E 00	3.063E 02	2.031E-03	3.322E-03
7.420E 01	1.899E-01	3.065E 02	2.013E-03	3.064E-03
7.495E 01	7.498E-01	3.073E 02	1.924E-03	2.019E-03
7.496E 01	1.165E-03	3.073E 02	1.924E-03	2.014E-03
7.628E 01	4.530E-01	3.077E 02	2.001E-03	2.980E-03
7.913E 01	6.847E-01	3.084E 02	1.789E-03	1.066E-03
8.303E 01	4.398E-01	3.086E 02	1.802E-03	1.221E-03
8.584E 01	2.756E-01	3.091E 02	1.841E-03	1.563E-03
8.870E 01	1.369E-01	3.092E 02	1.860E-03	1.787E-03
8.871E 01	0.000	3.092E 02	1.860E-03	1.788E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-167.	(LBF)
MEASURED THRUST	-200.	(LBF)
CALCULATED SPECIFIC IMPULSE	-884.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-1061.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.1160	
MEASURED THRUST COEFFICIENT	-.1391	

REGENERATIVE-COOLED ENGINE PERFORMANCE

CALCULATED

STREAM THRUST	2846.	(LBF)
NET THRUST	-38.	(LBF)
SPECIFIC IMPULSE	-199.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.0261	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.6	(LBF)
INLET MOMENTUM CHANGE	-398.0	(LBF)
COMBUSTOR FRICTION DRAG	205.7	(LBF)
COMBUSTOR STRUT DRAG	16.56	(LBF)
COMBUSTOR MOMENTUM CHANGE	-27.	(LBF)
NOZZLE FRICTION DRAG	18.93	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	258.	(LBF)
NOZZLE PRESSURE INTEGRAL	277.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-720.	(LBF)
TOTAL STRUT DRAG	16.56	(LBF)
CAVITY FORCE	-580.	(LBF)
CALCULATED LOAD CELL FORCE	-1467.	(LBF)
MEASURED LOAD CELL FORCE	-1500.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE 0.0,	0.0,	

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9878	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1004	
DELTA PT2	0.0875	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3371	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1017	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9068	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9129	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9295	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.6786	
ENTHALPY AT PO - SUPERSONIC	-29.32	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	11.44	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0130
EQUIVALENCE RATIO	0.415
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.1708
COMBUSTOR EFFECTIVENESS	0.1579
INJECTOR DISCHARGE COEFFICIENTS	0.9305, 0.6781,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	1.0172
NOZZLE COEFFICIENT - CT	0.9840
PROCESS EFFICIENCY	1.2477
KINETIC ENERGY EFFICIENCY	1.0319

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7349	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.619	(IN)
NOZZLE SHROUD TRAILING EDGE	74.959	(IN)
NOZZLE PLUG TRAILING EDGE	88.711	(IN)
STRUT LEADING EDGE	57.875	(IN)
STRUT TRAILING EDGE	66.475	(IN)
COMBUSTOR EXIT	66.475	(IN)

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.720	B
1C	44.300	
2A	50.195	
2C	46.250	
3A	55.485	
3B	57.670	
4	46.220	

2/12/75


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READING = 0088  BLOCK = 168  TIME = 269.701  MACH  7.2  PT = 998.999  TT = 3278.2
                                   RAMJET PERFORMANCE

                              S U M M A R Y   R E P O R T

      P         T      H              GAMMA  MOLWT  SONV  MACH  VEL    S     F/A      W     A/AC   MOMTM    F     IVAC  PHI  ETAC
WIND TUNNEL     1    0   6
 0.000    998.999 3278  755.6( 878) 1.2848 28.903 2692
 0.000      0.153  321  -52.0(  77) 1.3971 28.901  879 7.234 6357 1.835 0.05680 14.363 0.9874   2877  5.611 200.3
SPIKE TIP NS    2    0   6
 0.600     11.350 3278  755.6( 878) 1.2838 28.900 2690
 0.600     10.503 3222  738.2( 861) 1.2857 28.901 2669 0.349  932 2.143 0.05680 14.363 0.9874   3072  6.822 213.9
WIND TUNNEL     3    0   0
 0.000    998.999 3278  755.6( 878) 1.2848 28.903 2692
 0.000      0.172  332  -49.5(  80) 1.3974 28.901  893 7.109 6347 1.835 0.06142 15.532 0.9874   3107  6.058 200.1
SPIKE TIP NS    4    0   0
 0.600     11.350 3278  755.6( 878) 1.2838 28.900 2690
 0.600     10.341 3211  734.8( 858) 1.2860 28.901 2665 0.383 1019 2.143 0.06142 15.532 0.9874   3107  6.973 200.1
INLET THROAT    5    0   4
40.400    312.434 3186  727.2( 851) 1.2876 28.902 2657
40.400     10.565 1400  216.1( 345) 1.3542 28.901 1806 2.800 5057 1.906 0.71367 14.363 0.0786   2470 56.091 172.0
INLET UPNRBK    6    0   3
40.400    312.434 3186  727.2( 851) 1.2876 28.902 2657
40.400      9.117 1347  202.2( 331) 1.3574 28.901 1774 2.890 5126 1.906 0.64879 14.363 0.0864   2490 51.681 173.4
INLET DNNRBK    7    0   4
40.400    100.868 3186  727.2( 851) 1.2875 28.902 2657
40.400     87.890 3090  697.5( 822) 1.2905 28.902 2619 0.466 1219 1.984 0.64879 14.363 0.0864   2890 12.295 173.4
COMBUSTOR       0    8   1  20
40.410    229.843 3004  739.9( 886) 1.2973 25.808 2740
40.410     13.082 1486  260.4( 411) 1.3532 25.808 1968 2.489 4898 2.090 0.72009 14.495 0.0786   2470 54.815 170.4 0.29 0.01
COMBUSTOR       0    9   2   5
40.745    162.281 3301  737.0( 979) 1.2831 26.132 2839
40.745     18.152 1975  305.0( 954) 1.3281 26.133 2234 2.082 4650 2.141 0.72275 14.495 0.0783   2499 52.227 169.6 0.29 0.23
COMBUSTOR       0   10   3  21
41.235    190.278 3013  732.8( 889) 1.2965 25.839 2742
41.235     12.513 1549  269.1( 429) 1.3496 25.839 2006 2.401 4817 2.105 0.71701 14.495 0.0789   2423 53.676 167.2 0.29 0.03
COMBUSTOR       0   11   4  21
41.500    178.410 2964  730.4( 874) 1.2987 25.796 2724
41.500     13.826 1586  293.7( 440) 1.3482 25.796 2030 2.303 4675 2.106 0.71014 14.495 0.0797   2388 51.592 164.8 0.29 0.01
COMBUSTOR       0   12   5   4
42.460     95.881 3172  720.0( 938) 1.2883 26.046 2793
42.460     24.142 2302  434.1( 657) 1.3173 26.047 2406 1.572 3782 2.170 0.66921 14.495 0.0846   2227 39.332 153.7 0.29 0.17
COMBUSTOR       0   13   6  21
42.720     84.734 2899  728.5( 923) 1.3022 23.759 2811
42.720     24.480 2153  467.6( 665) 1.3273 23.759 2446 1.477 3613 2.302 0.66624 14.607 0.0856   2177 37.404 149.0 0.54 0.05
COMBUSTOR       0   14   7  15
42.730     89.386 2781  728.3( 884) 1.3077 23.649 2765
42.730     24.492 2031  468.3( 626) 1.3331 23.649 2386 1.512 3607 2.285 0.66541 14.607 0.0657   2175 37.310 148.9 0.54 0.00
COMBUSTOR       0   15   8  21
42.795     87.354 2778  727.5( 882) 1.3079 23.648 2764
42.795     24.572 2042  472.2( 629) 1.3327 23.648 2392 1.494 3573 2.287 0.66397 14.607 0.0859   2163 36.872 148.1 0.54 0.00
COMBUSTOR       0   16   9  21
44.310     61.390 2941  704.3( 936) 1.2993 23.862 2822
44.310     38.067 2631  593.5( 827) 1.3096 23.862 2679 0.879 2355 2.331 0.61400 14.607 0.0929   1975 22.473 135.2 0.54 0.09
COMBUSTOR       0   17  10  21
44.800     61.627 2724  696.1( 863) 1.3091 23.679 2736
44.800     42.431 2492  614.5( 782) 1.3167 23.679 2625 0.770 2021 2.309 0.60639 14.607 0.0940   1940 19.050 132.8 0.54 0.01
COMBUSTOR       0   18  11  21
45.515     60.973 2661  684.3( 841) 1.3115 23.652 2709
45.515     44.100 2463  614.6( 772) 1.3181 23.652 2612 0.715 1868 2.302 0.60189 14.607 0.0948   1918 17.471 131.3 0.54 0.00
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ORIGINAL PAGE IS
OF POOR QUALITY

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	F/A	W	A/AC	MOMTM	C	IVAC	PHT	ETAC
COMBUSTOR	0	19	12 21														
46.230	60.354	2625	672.9(829)	1.3128	23.648	2691											
46.230	37.260	2337	572.5(729)	1.3224	23.648	2549	0.880	2242	2.298	0.58509	14.607	0.0975	1948	20.390	133.4	0.54	0.00
COMBUSTOR	0	20	13 21														
46.260	60.355	2623	672.5(828)	1.3129	23.648	2691											
46.260	36.972	2330	570.6(727)	1.3226	23.647	2546	0.887	2259	2.297	0.58367	14.607	0.0977	1951	20.487	133.5	0.54	0.00
COMBUSTOR	0	21	14 4														
47.310	60.404	2659	657.1(838)	1.3108	23.716	2700											
47.310	26.927	2183	493.8(676)	1.3268	23.716	2464	1.160	2858	2.300	0.54114	14.607	0.1054	2025	24.036	138.6	0.54	0.03
COMBUSTOR	0	22	15 4														
48.110	60.227	2710	645.9(854)	1.3079	23.797	2721											
48.110	20.690	2093	432.6(640)	1.3290	23.797	2411	1.355	3267	2.306	0.49729	14.607	0.1147	2091	25.246	143.1	0.54	0.06
COMBUSTOR	0	23	16 4														
48.755	57.318	2828	637.1(895)	1.3021	23.932	2766											
48.755	18.325	2153	402.4(663)	1.3251	23.932	2435	1.407	3427	2.320	0.45157	14.607	0.1263	2148	24.047	147.1	0.54	0.12
COMBUSTOR	0	24	17 4														
50.205	52.789	2970	620.3(942)	1.2949	24.113	2816											
50.205	13.241	2142	331.0(656)	1.3233	24.114	2417	1.574	3804	2.338	0.36697	14.607	0.1554	2254	21.696	154.3	0.54	0.20
COMBUSTOR	0	25	18 2														
50.735	52.842	2954	615.7(936)	1.2955	24.110	2809											
50.735	11.383	2051	301.7(626)	1.3267	24.111	2369	1.673	3964	2.336	0.34321	14.607	0.1662	2284	21.142	156.4	0.54	0.20
COMBUSTOR	0	26	19 4														
52.145	48.584	3063	605.3(973)	1.2899	24.245	2846											
52.145	9.337	2078	261.2(633)	1.3240	24.246	2376	1.747	4150	2.351	0.29251	14.607	0.1950	2350	18.864	160.9	0.54	0.25
COMBUSTOR	0	27	20 4														
54.245	50.093	2957	590.8(940)	1.2944	24.087	2811											
54.245	6.125	1785	186.5(539)	1.3364	24.088	2219	2.027	4498	2.346	0.24052	14.654	0.2379	2422	16.812	165.3	0.55	0.22
COMBUSTOR	0	28	21 4														
54.745	48.173	2994	588.2(952)	1.2926	24.130	2824											
54.745	5.933	1814	180.3(548)	1.3347	24.130	2234	2.022	4518	2.352	0.23069	14.654	0.2480	2435	16.196	166.1	0.55	0.24
COMBUSTOR	0	29	22 4														
55.495	51.537	2912	584.5(924)	1.2964	24.060	2793											
55.495	4.961	1651	152.8(495)	1.3428	24.060	2140	2.172	4648	2.339	0.21746	14.654	0.2631	2451	15.708	167.3	0.55	0.21
COMBUSTOR	0	30	23 3														
55.760	53.457	2874	583.3(912)	1.2981	24.027	2779											
55.760	4.617	1582	142.6(474)	1.3465	24.027	2099	2.237	4696	2.332	0.21317	14.654	0.2684	2454	15.558	167.6	0.55	0.20
COMBUSTOR	0	31	24 2														
56.255	50.108	2870	581.2(910)	1.2982	24.028	2776											
56.255	3.250	1466	105.1(437)	1.3525	24.029	2025	2.410	4881	2.337	0.16823	14.654	0.3401	2506	12.760	171.0	0.55	0.20
COMBUSTOR	0	32	25 5														
57.680	39.697	3068	575.7(976)	1.2885	24.237	2848											
57.680	3.543	1723	111.3(517)	1.3375	24.238	2174	2.217	4821	2.372	0.15549	14.654	0.3679	2530	11.649	172.6	0.55	0.28
COMBUSTOR	0	33	26 4														
57.735	35.665	3181	575.5(1015)	1.2829	24.350	2886											
57.735	3.938	1896	126.8(572)	1.3289	24.352	2268	2.089	4738	2.389	0.15508	14.654	0.3689	2530	11.420	172.7	0.55	0.33
COMBUSTOR	0	34	27 3														
57.875	35.404	3186	575.1(1017)	1.2826	24.357	2888											
57.875	3.917	1901	125.9(573)	1.3286	24.359	2271	2.088	4741	2.390	0.15397	14.654	0.3716	2532	11.344	172.8	0.55	0.33
COMBUSTOR	0	35	28 7														
57.955	40.905	3051	574.8(971)	1.2893	24.222	2841											
57.955	3.460	1689	105.4(506)	1.3392	24.223	2154	2.259	4846	2.368	0.15567	14.654	0.3675	2533	11.724	172.9	0.55	0.28
COMBUSTOR	0	36	29 3														
58.235	41.822	3037	573.9(966)	1.2900	24.210	2836											
58.235	3.375	1659	100.3(496)	1.3407	24.211	2137	2.278	4868	2.365	0.15515	14.654	0.3688	2536	11.739	173.1	0.55	0.27
COMBUSTOR	0	37	30 4														
58.461	48.605	2918	573.3(926)	1.2956	24.096	2793											
58.461	2.941	1469	81.3(437)	1.3516	24.097	2024	2.451	4962	2.343	0.15486	14.654	0.3695	2538	11.941	173.2	0.55	0.23

READING = 0088 BLOCK = 168 TIME = 269.701 MACH 7.2 PT = 998.999 TT = 3278.2

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	TVAC	PHI	ETAC
COMBUSTOR	0	38	31 9														
59.185	112.712	2515	571.3(791)	1.3142	23.721	2632											
59.185	1.550	820	20.1(241)	1.3893	23.721	1545	3.399	5252	2.234	0.15246	14.654	0.3753	2541	12.443	173.4	0.55	0.07
COMBUSTOR	0	39	32 5														
60.205	73.467	2674	568.8(844)	1.3068	23.876	2698											
60.205	2.050	1076	40.0(317)	1.3754	23.876	1755	2.931	5144	2.286	0.15149	14.654	0.3777	2541	12.110	173.4	0.55	0.14
COMBUSTOR	0	40	33 6														
62.215	31.860	3357	564.2(1074)	1.2731	24.562	2941											
62.215	4.612	2160	138.0(657)	1.3161	24.567	2399	1.925	4618	2.408	0.15676	14.654	0.3650	2535	11.250	173.0	0.55	0.42
COMBUSTOR	0	41	34 4														
63.635	34.935	3249	561.0(1037)	1.2788	24.459	2906											
63.635	4.356	2005	123.2(606)	1.3233	24.462	2322	2.016	4681	2.393	0.16101	14.654	0.3553	2528	11.711	172.5	0.55	0.37
COMBUSTOR	0	42	35 4														
66.099	27.267	3511	554.7(1127)	1.2638	24.750	2984											
66.099	5.257	2438	164.7(748)	1.3037	24.759	2526	1.749	4418	2.429	0.15262	14.654	0.3749	2517	10.478	171.8	0.55	0.49
COMBUSTOR	0	43	36 4														
66.475	23.051	3709	553.7(1194)	1.2509	24.966	3039											
66.475	5.727	2757	197.1(854)	1.2896	24.985	2660	1.588	4224	2.452	0.14188	14.654	0.4052	2515	9.313	171.6	0.55	0.58
COMBUSTOR	REGEN	44	37 3														
66.475	23.051	4114	725.8(1343)	1.2272	24.925	3173											
66.475	6.602	3210	362.0(1014)	1.2715	24.980	2850	1.497	4267	2.496	0.14188	14.654	0.4032	2625	9.409	179.2	0.55	0.58
NOZZLE AE		45	38 5														
88.711	23.051	3709	553.7(1171)	1.2509	24.966	3039											
88.711	0.434	1084	-227.4(432)	1.3419	24.986	1991	3.140	6252	2.452	0.02954	14.654	1.9371	3063	2.870	209.0	0.55	0.58
NOZZLE PO		46	39 5														
88.711	23.051	3709	553.7(1171)	1.2509	24.966	3039											
88.711	0.153	1132	-334.9(324)	1.3627	24.986	1752	3.806	6668	2.452	0.01461	14.654	3.9147	3191	1.515	217.8	0.55	0.58
NOZZLE AE	REGEN	47	40 5														
88.711	23.051	4114	725.8(1343)	1.2272	24.925	3173											
88.711	0.487	1755	-141.4(518)	1.3279	24.986	2154	3.059	6588	2.496	0.02954	14.654	1.9371	3242	3.024	221.2	0.55	0.58
NOZZLE PO	REGEN	48	41 5														
88.711	23.051	4114	725.8(1343)	1.2272	24.925	3173											
88.711	0.153	1310	-281.3(378)	1.3520	24.986	1877	3.782	7099	2.496	0.01345	14.654	4.2540	3401	1.484	232.1	0.55	0.58
FICTIVE COMBUSTR		67	60 0														
66.475	312.434	4644	583.7(1520)	1.2102	26.052	3275											
66.475	0.153	817	-802.5(225)	1.3715	26.156	1459	5.646	8238	2.279	0.02620	14.654	2.1835	3838	3.355	261.9	0.55	1.00
FICTIVE NOZZLE		68	61 0														
88.711	15.190	3679	542.9(1184)	1.2505	24.965	3027											
88.711	0.532	1720	-152.9(506)	1.3296	24.986	2133	2.766	5900	2.483	0.02954	14.654	1.9371	2952	2.708	201.4	0.55	0.58

XABS	P-I8	P-DH	PCA	CUX	Q-IP	C-CH	CA-ALI	P-I8/PSO	P-IH/PTO	P-OR/PSU	P-CP/PTO
6.981E-01	6.900E-01	0.000	-2.792E-01	0.000	0.000	0.000	2.470E-02	4.496E 00	6.907E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.650E 02	4.496E 00	6.907E-04	0.000	0.000
3.070E 01	1.020E 00	0.000	-9.228E 01	0.000	0.000	0.000	5.353E 02	6.696E 00	1.021E-03	0.000	0.000
3.508E 01	1.898E 00	0.000	-1.868E 02	0.000	0.000	0.000	6.804E 02	1.237E 01	1.900E-03	0.000	0.000
3.555E 01	2.165E 00	0.000	-2.054E 02	0.000	0.000	0.000	7.013E 02	1.411E 01	2.167E-03	0.000	0.000
3.606E 01	2.065E 00	0.000	-2.268E 02	-1.537E 02	-1.537E 02	0.000	7.246E 02	1.405E 01	2.067E-03	0.000	0.000
3.648E 01	2.260E 00	0.000	-2.453E 02	-1.574E 02	-1.574E 02	0.000	7.043E 02	1.473E 01	2.262E-03	0.000	0.000
3.661E 01	2.293E 00	3.264E 00	-2.853E 02	-1.586E 02	-1.586E 02	0.000	7.506E 02	1.494E 01	2.295E-03	2.127E 01	3.267E-03
3.662E 01	2.294E 00	3.279E 00	-2.854E 02	-1.587E 02	-1.587E 02	0.000	7.508E 02	1.495E 01	2.296E-03	2.136E 01	3.282E-03
3.701E 01	2.390E 00	4.275E 00	-2.874E 02	-1.623E 02	-1.623E 02	0.000	7.914E 02	1.557E 01	2.392E-03	2.785E 01	4.279E-03
3.728E 01	2.279E 00	4.975E 00	-2.871E 02	-1.650E 02	-1.650E 02	0.000	8.203E 02	1.485E 01	2.282E-03	3.242E 01	4.980E-03
3.803E 01	1.980E 00	8.295E 00	-2.705E 02	-1.726E 02	-1.726E 02	0.000	9.005E 02	1.290E 01	1.982E-03	5.405E 01	8.304E-03
3.874E 01	6.554E 00	1.148E 01	-2.678E 02	-2.402E 02	-1.863E 02	-5.392E 01	9.801E 02	4.270E 01	6.561E-03	7.481E 01	1.149E-02
3.875E 01	6.587E 00	1.146E 01	-2.678E 02	-2.406E 02	-1.864E 02	-5.417E 01	9.807E 02	4.292E 01	6.593E-03	7.470E 01	1.148E-02
3.901E 01	8.250E 00	1.060E 01	-2.722E 02	-2.616E 02	-1.945E 02	-6.713E 01	1.010E 03	5.375E 01	8.258E-03	6.905E 01	1.061E-02
3.950E 01	1.149E 01	8.964E 00	-2.898E 02	-3.064E 02	-2.150E 02	-9.144E 01	1.066E 03	7.487E 01	1.150E-02	5.841E 01	8.973E-03
3.976E 01	1.128E 01	8.081E 00	-3.000E 02	-3.338E 02	-2.292E 02	-1.045E 02	1.097E 03	7.350E 01	1.129E-02	5.266E 01	8.089E-03
4.000E 01	1.109E 01	7.791E 00	-3.071E 02	-3.600E 02	-2.439E 02	-1.161E 02	1.124E 03	7.228E 01	1.110E-02	5.076E 01	7.798E-03
4.023E 01	1.336E 01	7.500E 00	-3.157E 02	-3.875E 02	-2.598E 02	-1.277E 02	1.151E 03	8.707E 01	1.338E-02	4.887E 01	7.508E-03
4.040E 01	1.496E 01	1.090E 01	-3.219E 02	-4.072E 02	-2.714E 02	-1.358E 02	1.171E 03	9.747E 01	1.497E-02	7.104E 01	1.091E-02
4.041E 01	1.506E 01	1.111E 01	-3.221E 02	-4.084E 02	-2.721E 02	-1.363E 02	1.172E 03	9.810E 01	1.507E-02	7.236E 01	1.112E-02
4.074E 01	1.829E 01	1.801E 01	-3.275E 02	-4.491E 02	-2.964E 02	-1.527E 02	1.211E 03	1.192E 02	1.831E-02	1.174E 02	1.803E-02
4.123E 01	2.303E 01	2.000E 00	-3.591E 02	-5.105E 02	-3.342E 02	-1.763E 02	1.269E 03	1.500E 02	2.305E-02	1.303E 01	2.002E-03
4.150E 01	2.559E 01	2.065E 00	-3.855E 02	-5.447E 02	-3.559E 02	-1.888E 02	1.300E 03	1.667E 02	2.561E-02	1.345E 01	2.067E-03
4.246E 01	4.602E 01	2.299E 00	-5.324E 02	-6.964E 02	-4.395E 02	-2.569E 02	1.414E 03	2.999E 02	4.607E-02	1.498E 01	2.302E-03
4.272E 01	4.660E 01	2.363E 00	-5.790E 02	-7.463E 02	-4.630E 02	-2.833E 02	1.445E 03	3.036E 02	4.664E-02	1.540E 01	2.365E-03
4.273E 01	4.662E 01	2.365E 00	-5.807E 02	-7.483E 02	-4.639E 02	-2.844E 02	1.446E 03	3.038E 02	4.667E-02	1.541E 01	2.368E-03
4.278E 01	4.676E 01	2.381E 00	-5.920E 02	-7.613E 02	-4.698E 02	-2.915E 02	1.454E 03	3.047E 02	4.681E-02	1.552E 01	2.384E-03
4.431E 01	5.010E 01	2.604E 01	-7.630E 02	-1.099E 03	-6.059E 02	-4.926E 02	1.637E 03	3.264E 02	5.015E-02	1.696E 02	2.606E-02
4.480E 01	5.117E 01	3.369E 01	-7.939E 02	-1.218E 03	-6.496E 02	-5.682E 02	1.696E 03	3.334E 02	5.123E-02	2.195E 02	3.372E-02
4.551E 01	4.335E 01	4.485E 01	-8.100E 02	-1.391E 03	-7.118E 02	-6.789E 02	1.783E 03	2.825E 02	4.339E-02	2.922E 02	4.489E-02
4.623E 01	3.552E 01	3.900E 01	-7.744E 02	-1.557E 03	-7.713E 02	-7.854E 02	1.871E 03	2.315E 02	3.556E-02	2.541E 02	3.904E-02
4.626E 01	3.519E 01	3.875E 01	-7.718E 02	-1.563E 03	-7.737E 02	-7.897E 02	1.875E 03	2.293E 02	3.523E-02	2.525E 02	3.879E-02
4.731E 01	2.370E 01	3.015E 01	-6.887E 02	-1.789E 03	-8.561E 02	-9.326E 02	2.004E 03	1.544E 02	2.372E-02	1.965E 02	3.018E-02
4.811E 01	1.777E 01	2.360E 01	-6.149E 02	-1.952E 03	-9.152E 02	-1.037E 03	2.103E 03	1.158E 02	1.779E-02	1.538E 02	2.363E-02
4.875E 01	1.832E 01	1.832E 01	-5.515E 02	-2.082E 03	-9.605E 02	-1.121E 03	2.183E 03	1.194E 02	1.834E-02	1.194E 02	1.834E-02
5.020E 01	1.324E 01	1.324E 01	-4.335E 02	-2.327E 03	-1.055E 03	-1.272E 03	2.365E 03	8.628E 01	1.325E-02	8.626E 01	1.325E-02
5.073E 01	1.138E 01	1.138E 01	-3.995E 02	-2.394E 03	-1.087E 03	-1.307E 03	2.431E 03	7.417E 01	1.139E-02	7.417E 01	1.139E-02
5.214E 01	9.337E 00	9.337E 00	-3.229E 02	-2.545E 03	-1.165E 03	-1.380E 03	2.609E 03	6.084E 01	9.347E-03	6.084E 01	9.347E-03
5.424E 01	6.125E 00	6.125E 00	-2.377E 02	-2.729E 03	-1.262E 03	-1.467E 03	2.875E 03	3.991E 01	6.131E-03	3.991E 01	6.131E-03
5.474E 01	5.933E 00	5.933E 00	-2.221E 02	-2.767E 03	-1.282E 03	-1.484E 03	2.939E 03	3.866E 01	5.939E-03	3.866E 01	5.939E-03
5.549E 01	4.961E 00	4.961E 00	-2.010E 02	-2.820E 03	-1.310E 03	-1.510E 03	3.035E 03	3.232E 01	4.966E-03	3.232E 01	4.966E-03
5.576E 01	4.617E 00	4.617E 00	-1.945E 02	-2.838E 03	-1.319E 03	-1.518E 03	3.068E 03	3.008E 01	4.621E-03	3.008E 01	4.621E-03
5.625E 01	2.525E 00	3.975E 00	-1.436E 02	-2.869E 03	-1.336E 03	-1.533E 03	3.102E 03	1.645E 01	2.528E-03	2.590E 01	3.979E-03
5.768E 01	3.543E 00	3.543E 00	-1.168E 02	-2.949E 03	-1.382E 03	-1.568E 03	3.209E 03	2.309E 01	3.547E-03	2.309E 01	3.547E-03
5.773E 01	4.350E 00	3.527E 00	-1.158E 02	-2.952E 03	-1.383E 03	-1.569E 03	3.217E 03	2.834E 01	4.354E-03	2.298E 01	3.530E-03
5.787E 01	4.350E 00	3.484E 00	-1.135E 02	-2.959E 03	-1.387E 03	-1.572E 03	3.234E 03	2.834E 01	4.354E-03	2.270E 01	3.488E-03
5.795E 01	3.460E 00	3.460E 00	-1.121E 02	-2.963E 03	-1.389E 03	-1.573E 03	3.245E 03	2.254E 01	3.463E-03	2.254E 01	3.463E-03
5.823E 01	3.375E 00	3.375E 00	-1.077E 02	-2.975E 03	-1.397E 03	-1.579E 03	3.280E 03	2.199E 01	3.378E-03	2.199E 01	3.378E-03
5.846E 01	2.941E 00	2.941E 00	-1.046E 02	-2.985E 03	-1.402E 03	-1.583E 03	3.309E 03	1.916E 01	2.944E-03	1.916E 01	2.944E-03
5.918E 01	1.550E 00	1.550E 00	-9.851E 01	-3.013E 03	-1.419E 03	-1.595E 03	3.402E 03	1.010E 01	1.552E-03	1.010E 01	1.552E-03
6.020E 01	2.050E 00	2.050E 00	-9.434E 01	-3.050E 03	-1.437E 03	-1.613E 03	3.532E 03	1.336E 01	2.052E-03	1.336E 01	2.052E-03
6.221E 01	4.612E 00	4.612E 00	-9.356E 01	-3.119E 03	-1.463E 03	-1.656E 03	3.790E 03	3.005E 01	4.617E-03	3.005E 01	4.617E-03
6.363E 01	4.356E 00	4.356E 00	-9.356E 01	-3.165E 03	-1.476E 03	-1.689E 03	3.972E 03	2.838E 01	4.361E-03	2.838E 01	4.361E-03
6.610E 01	5.257E 00	5.257E 00	-9.356E 01	-3.257E 03	-1.502E 03	-1.755E 03	4.289E 03	3.425E 01	5.263E-03	3.425E 01	5.263E-03
6.647E 01	6.060E 00	5.395E 00	-9.356E 01	-3.272E 03	-1.506E 03	-1.766E 03	4.337E 03	3.949E 01	6.066E-03	3.515E 01	5.400E-03

READING = 0088 BLOCK = 168 TIME = 269.701 MACH 7.2 PT = 998.999 TT = 3278.2

XABS	P-IR	P-OR	PDA	QOX	Q-IR	Q-OR	CAWALL	P-IR/P80	P-IR/PTO	P-OR/P80	P-OR/PTO
6.651E 01	6.060E 00	5.409E 00	-9.356E 01	-3.274E 03	-1.507E 03	-1.747E 03	4.342E 03	3.949E 01	6.066E-03	3.525E 01	5.415E-03
6.671E 01	5.828E 00	5.482E 00	-9.356E 01	-3.283E 03	-1.509E 03	-1.773E 03	4.368E 03	3.797E 01	5.834E-03	3.572E 01	5.488E-03
6.837E 01	3.900E 00	4.125E 00	-3.985E 01	-3.344E 03	-1.525E 03	-1.819E 03	4.564E 03	2.571E 01	3.904E-03	2.688E 01	4.129E-03
6.904E 01	3.263E 00	3.435E 00	3.462E 01	-3.365E 03	-1.530E 03	-1.834E 03	4.665E 03	2.126E 01	3.266E-03	2.236E 01	3.438E-03
6.981E 01	2.530E 00	2.164E 00	1.142E 02	-3.387E 03	-1.536E 03	-1.851E 03	4.760E 03	1.648E 01	2.533E-03	1.410E 01	2.166E-03
7.053E 01	2.029E 00	9.750E-01	1.660E 02	-3.406E 03	-1.540E 03	-1.866E 03	4.848E 03	1.322E 01	2.031E-03	6.353E 00	9.760E-04
7.114E 01	1.605E 00	9.681E-01	1.978E 02	-3.422E 03	-1.543E 03	-1.879E 03	4.922E 03	1.046E 01	1.607E-03	6.308E 00	9.690E-04
7.252E 01	9.000E-01	9.524E-01	2.503E 02	-3.451E 03	-1.549E 03	-1.902E 03	5.048E 03	5.864E 00	9.009E-04	6.205E 00	9.533E-04
7.405E 01	4.810E-01	9.350E-01	2.887E 02	-3.474E 03	-1.554E 03	-1.920E 03	5.273E 03	3.134E 00	4.815E-04	6.092E 00	9.359E-04
7.420E 01	4.400E-01	8.142E-01	2.915E 02	-3.476E 03	-1.554E 03	-1.922E 03	5.290E 03	2.867E 00	4.404E-04	5.305E 00	8.150E-04
7.495E 01	4.887E-01	2.100E-01	3.083E 02	-3.487E 03	-1.556E 03	-1.931E 03	5.374E 03	3.184E 00	4.892E-04	1.368E 00	2.102E-04
7.496E 01	4.889E-01	2.068E-01	3.087E 02	-3.487E 03	-1.556E 03	-1.931E 03	5.375E 03	3.186E 00	4.894E-04	1.347E 00	2.070E-04
7.628E 01	5.750E-01	0.000	3.199E 02	-3.510E 03	-1.559E 03	-1.951E 03	5.426E 03	3.747E 00	5.756E-04	0.000	0.000
7.913E 01	2.600E-01	0.000	3.366E 02	-3.513E 03	-1.562E 03	-1.951E 03	5.525E 03	1.694E 00	2.603E-04	0.000	0.000
8.303E 01	2.850E-01	0.000	3.483E 02	-3.429E 03	-1.564E 03	-1.866E 03	5.630E 03	1.857E 00	2.853E-04	0.000	0.000
8.584E 01	3.100E-01	0.000	3.549E 02	-3.430E 03	-1.564E 03	-1.866E 03	5.684E 03	2.020E 00	3.103E-04	0.000	0.000
8.870E 01	5.050E-01	0.000	3.647E 02	-3.430E 03	-1.565E 03	-1.866E 03	5.707E 03	3.290E 00	5.055E-04	0.000	0.000
8.871E 01	5.054E-01	0.000	3.647E 02	-3.430E 03	-1.565E 03	-1.866E 03	5.707E 03	3.293E 00	5.059E-04	0.000	0.000

READING = 0088 BLOCK = 108 TIME = 269.701 MACH 7.2 PT = 998.499 TT = 3278.2

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.488E 01	8.488E 01	2.299E-03	3.427E-02
4.041E 01	1.722E-01	8.505E 01	3.011E-03	5.742E-02
4.074E 01	5.789E 00	9.084E 01	2.507E-03	5.334E-02
4.123E 01	6.080E 00	9.692E 01	2.790E-03	3.827E-02
4.150E 01	4.445E 00	1.034E 02	2.608E-03	4.270E-02
4.246E 01	1.424E 01	1.176E 02	2.882E-03	5.499E-02
4.272E 01	3.742E 00	1.213E 02	3.410E-03	4.876E-02
4.273E 01	1.025E-01	1.215E 02	3.044E-03	5.466E-02
4.279E 01	8.705E-01	1.224E 02	2.981E-03	5.563E-02
4.431E 01	1.695E 01	1.393E 02	3.276E-03	5.462E-02
4.480E 01	4.164E 00	1.435E 02	3.468E-03	5.035E-02
4.551E 01	5.481E 00	1.493E 02	3.412E-03	5.963E-02
4.623E 01	5.552E 00	1.545E 02	3.285E-03	5.204E-02
4.626E 01	2.466E-01	1.548E 02	3.277E-03	5.208E-02
4.731E 01	9.189E 00	1.639E 02	3.097E-03	4.936E-02
4.811E 01	7.453E 00	1.714E 02	3.006E-03	4.343E-02
4.875E 01	5.914E 00	1.773E 02	2.975E-03	4.036E-02
5.020E 01	1.218E 01	1.895E 02	2.904E-03	3.240E-02
5.073E 01	4.189E 00	1.937E 02	2.979E-03	2.840E-02
5.214E 01	1.039E 01	2.041E 02	2.871E-03	2.474E-02
5.424E 01	1.360E 01	2.177E 02	2.854E-03	1.789E-02
5.474E 01	2.954E 00	2.206E 02	2.763E-03	1.774E-02
5.540E 01	4.216E 00	2.246E 02	2.753E-03	1.549E-02
5.576E 01	1.440E 00	2.263E 02	2.675E-03	1.495E-02
5.625E 01	1.229E 00	2.275E 02	2.526E-03	1.125E-02
5.768E 01	3.305E 00	2.308E 02	2.503E-03	1.182E-02
5.773E 01	2.119E-01	2.310E 02	2.711E-03	1.208E-02
5.787E 01	5.571E-01	2.316E 02	2.798E-03	1.174E-02
5.795E 01	3.539E-01	2.319E 02	3.198E-03	9.696E-03
5.823E 01	1.225E 00	2.332E 02	2.655E-03	1.043E-02
5.846E 01	9.010E-01	2.341E 02	2.623E-03	9.960E-03
5.918E 01	2.881E 00	2.369E 02	2.480E-03	6.400E-03
6.020E 01	3.547E 00	2.405E 02	1.940E-03	8.948E-03
6.221E 01	6.475E 00	2.470E 02	2.359E-03	1.460E-02
6.363E 01	5.486E 00	2.524E 02	2.886E-03	1.212E-02
6.610E 01	1.012E 01	2.626E 02	2.883E-03	1.369E-02
6.647E 01	1.431E 00	2.640E 02	3.113E-03	1.339E-02
6.651E 01	1.518E-01	2.641E 02	3.237E-03	1.303E-02
6.671E 01	7.723E-01	2.649E 02	3.233E-03	1.292E-02
6.837E 01	6.160E 00	2.711E 02	3.159E-03	1.048E-02
6.904E 01	2.135E 00	2.732E 02	3.123E-03	9.323E-03
6.981E 01	2.209E 00	2.754E 02	3.058E-03	7.332E-03
7.053E 01	1.687E 00	2.771E 02	2.981E-03	5.345E-03
7.114E 01	1.204E 00	2.783E 02	2.953E-03	4.772E-03
7.252E 01	2.358E 00	2.807E 02	2.893E-03	3.737E-03
7.409E 01	2.177E 00	2.828E 02	2.842E-03	3.046E-03
7.420E 01	1.799E-01	2.830E 02	2.820E-03	2.777E-03
7.495E 01	7.112E-01	2.837E 02	2.715E-03	1.769E-03
7.496E 01	1.107E-03	2.837E 02	2.714E-03	1.763E-03
7.628E 01	4.216E-01	2.842E 02	2.795E-03	2.569E-03
7.913E 01	7.331E-01	2.849E 02	2.643E-03	1.395E-03
8.303E 01	6.007E-01	2.855E 02	2.641E-03	1.487E-03
8.584E 01	3.296E-01	2.858E 02	2.643E-03	1.579E-03
8.870E 01	1.667E-01	2.860E 02	2.716E-03	2.291E-03
8.871E 01	0.000	2.860E 02	2.716E-03	2.293E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	74.	(LBF)
MEASURED THRUST	472.	(LBF)
CALCULATED SPECIFIC IMPULSE	298.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	1889.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.0518	
MEASURED THRUST COEFFICIENT	0.3286	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	3120.	(LBF)
NET THRUST	247.	(LBF)
SPECIFIC IMPULSE	969.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.1720	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.9	(LBF)
INLET MOMENTUM CHANGE	-406.8	(LBF)
COMBUSTOR FRICTION DRAG	179.1	(LBF)
COMBUSTOR STRUT DRAG	4.27	(LBF)
COMBUSTOR MOMENTUM CHANGE	45.	(LBF)
NOZZLE FRICTION DRAG	22.00	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	436.	(LBF)
NOZZLE PRESSURE INTEGRAL	458.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-719.	(LBF)
TOTAL STRUT DRAG	4.27	(LBF)
CAVITY FORCE	-646.	(LBF)
CALCULATED LOAD CELL FORCE	-1290.	(LBF)
MEASURED LOAD CELL FORCE	-892.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7349	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.619	(IN)
NOZZLE SHROUD TRAILING EDGE	74.959	(IN)
NOZZLE PLUG TRAILING EDGE	68.711	(IN)
STRUT LEADING EDGE	57.875	(IN)
STRUT TRAILING EDGE	66.075	(IN)
COMBUSTOR EXIT	66.075	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9874	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0997	
DELTA PT2	0.0883	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3127	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1010	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9008	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9117	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9320	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8830	
ENTHALPY AT P0 - SUPERSONIC	-25.39	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	14.18	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0174
EQUIVALENCE RATIO	0.553
COMBUSTOR EFFICIENCY	0.577
TOTAL PRESSURE RATIO	0.0738
COMBUSTOR EFFECTIVENESS	0.5246
INJECTOR DISCHARGE COEFFICIENTS	0.9320, 0.6727,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9637
NOZZLE COEFFICIENT - CT	0.9011
PROCESS EFFICIENCY	0.8757
KINETIC ENERGY EFFICIENCY	0.9200

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.720	B
1C	44.300	
2A	50.195	
2C	46.250	
3A	55.085	
3B	57.670	
4	46.220	

ORIGINAL PAGE IS
OF POOR QUALITY

2/12/75

RAMJET PERFORMANCE

S U M M A R Y R E P O R T

	P	T	H		GAMMA	MOLWT	SONV	MACH	VEL	S	F/A	W	A/AC	MUPIM	G	TVAC	PHI	ETAC
WIND TUNNEL		1	0 6.															
0.000	998.499	3269	752.7(	875)	1.2851	28.903	2688											
0.000	0.153	320	-52.2(	77)	1.3971	28.901	877	7.235	6347	1.834	0.05690	14.387	0.9872	2877	5.612	200.0		
SPIKE TIP NS		2	0 6															
0.600	11.375	3268	752.7(	875)	1.2841	28.901	2687											
0.600	10.530	3213	735.5(	859)	1.2860	28.901	2666	0.348	928	2.142	0.05690	14.387	0.9872	3077	0.821	213.9		
WIND TUNNEL		3	0 0															
0.000	998.499	3269	752.7(	875)	1.2851	28.903	2688											
0.000	0.172	331	-49.7(	79)	1.3974	28.901	892	7.107	6337	1.834	0.06166	15.590	0.9872	3114	6.072	199.7		
SPIKE TIP NS		4	0 0															
0.600	11.375	3268	752.7(	875)	1.2841	28.901	2687											
0.600	10.364	3202	732.0(	855)	1.2864	28.901	2662	0.383	1018	2.142	0.06166	15.590	0.9872	3114	0.976	199.7		
INLET THROAT		5	0 4															
40.400	313.967	3172	722.9(	847)	1.2880	28.902	2651											
40.400	10.527	1390	213.3(	342)	1.3548	28.902	1800	2.806	5049	1.904	0.71524	14.387	0.0785	2470	56.125	171.7		
INLET UPNRBK		6	0 3															
40.400	313.967	3172	722.9(	847)	1.2880	28.902	2651											
40.400	9.054	1337	199.5(	329)	1.3580	28.901	1767	2.895	5117	1.904	0.65022	14.387	0.0864	2489	51.710	173.0		
INLET DNNRBK		7	0 4															
40.400	100.897	3172	722.9(	847)	1.2879	28.902	2651											
40.400	87.926	3076	693.3(	818)	1.2909	28.902	2613	0.465	1216	1.982	0.65022	14.387	0.0864	2489	12.289	173.0		
COMBUSTOR	0	8	1 19															
40.410	228.662	2993	735.8(	884)	1.2976	25.786	2737											
40.410	13.137	1484	258.7(	410)	1.3533	25.786	1968	2.483	4886	2.091	0.72174	14.519	0.0785	2469	54.803	170.1	0.30	0.02
COMBUSTOR	0	9	2 5															
40.747	160.956	3296	732.8(	978)	1.2832	26.116	2838											
40.747	18.316	1980	303.7(	556)	1.3278	26.117	2237	2.071	4634	2.142	0.72440	14.519	0.0783	2458	52.164	169.3	0.30	0.23
COMBUSTOR	0	10	3 21															
41.237	190.622	2999	728.3(	885)	1.2969	25.815	2737											
41.237	12.529	1541	266.4(	427)	1.3500	25.815	2002	2.402	4808	2.105	0.71841	14.519	0.0789	2423	53.691	166.9	0.30	0.03
COMBUSTOR	0	11	4 21															
41.500	179.248	2949	725.8(	869)	1.2992	25.771	2719											
41.500	13.826	1575	290.5(	437)	1.3488	25.771	2024	2.306	4667	2.105	0.71177	14.519	0.0796	2388	51.624	164.5	0.30	0.01
COMBUSTOR	0	12	5 4															
42.460	94.856	3175	714.8(	939)	1.2879	26.042	2794											
42.460	24.701	2323	434.3(	664)	1.3163	26.043	2416	1.551	3746	2.172	0.67130	14.519	0.0844	2225	39.080	153.2	0.30	0.18
COMBUSTOR	0	13	6 21															
42.722	83.911	2880	723.8(	922)	1.3028	23.651	2810											
42.722	24.961	2156	468.5(	669)	1.3273	23.651	2493	1.457	3574	2.310	0.66781	14.637	0.0856	2173	37.091	148.5	0.56	0.05
COMBUSTOR	0	14	7 6															
42.732	88.391	2766	723.7(	882)	1.3083	23.542	2764											
42.732	24.971	2035	469.2(	630)	1.3331	23.541	2393	1.491	3568	2.293	0.66718	14.637	0.0857	2171	36.997	148.3	0.56	0.00
COMBUSTOR	0	15	8 21															
42.797	86.509	2756	722.7(	879)	1.3087	23.535	2761											
42.797	25.036	2039	473.2(	631)	1.3330	23.535	2396	1.474	3533	2.293	0.66470	14.637	0.0860	2159	36.498	147.5	0.56	0.00
COMBUSTOR	0	16	9 21															
44.310	63.436	2689	699.0(	855)	1.3109	23.534	2729											
44.310	38.218	2381	590.6(	748)	1.3210	23.534	2578	0.903	2379	2.311	0.61530	14.637	0.0929	1969	22.271	134.5	0.56	0.00
COMBUSTOR	0	17	10 21															
44.800	59.123	3002	690.7(	960)	1.2960	23.849	2848											
44.800	42.487	2782	611.1(	882)	1.3034	23.849	2749	0.726	1996	2.347	0.60761	14.637	0.0941	1932	18.847	132.0	0.56	0.13
COMBUSTOR	0	18	11 21															
45.517	60.406	2682	678.7(	852)	1.3104	23.580	2722											
45.517	44.223	2490	610.8(	785)	1.3167	23.580	2629	0.701	1844	2.313	0.60339	14.637	0.0947	1912	17.291	130.6	0.56	0.02

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READING = 0088  BLOCK = 169  TIME = 270.601  MACH  7.2  PT = 996.499  TT = 3269.1                                    PAGE  2

                P      T      H          GAMMA  MOLWT SONV  MACH  VEL    S      /A       *      A/AC   FLOW    Q     IVAC  PHT  ETAC
COMBUSTOR       0     19    12   21
46.232     59.960 2607   667.2( 826) 1.3135 23.541 2849
46.232     37.410 2326   569.1( 729) 1.3228 23.541 2549 0.869 2216 2.304 0.58665 14.637 0.0974   1942 20.207 132.7 0.56 0.00
COMBUSTOR       0     20    13   21
46.260     60.013 2599   666.8( 824) 1.3138 23.535 2686
46.260     37.142 2315   567.3( 725) 1.3233 23.535 2544 0.877 2231 2.303 0.58516 14.637 0.0977   1944 20.290 132.8 0.56 0.00
COMBUSTOR       0     21    14    3
47.310     60.149 2619   651.3( 830) 1.3123 23.594 2691
47.310     27.137 2159   491.5( 671) 1.3279 23.594 2458 1.150 2827 2.305 0.54246 14.637 0.1053   2019 23.635 137.9 0.56 0.03
COMBUSTOR       0     22    15    4
48.110     59.920 2677   640.0( 808) 1.3092 23.676 2713
48.110     20.798 2072   430.0( 640) 1.3309 23.676 2405 1.348 3241 2.311 0.49850 14.637 0.1146   2085 25.110 142.5 0.56 0.06
COMBUSTOR       0     23    16    4
48.757     56.995 2797   631.0( 888) 1.3034 23.611 2759
48.757     18.425 2134   399.8( 659) 1.3261 23.611 2431 1.399 3401 2.326 0.45251 14.637 0.1263   2143 23.918 146.4 0.56 0.12
COMBUSTOR       0     24    17    4
50.207     52.438 2942   614.2( 936) 1.2961 23.994 2811
50.207     13.323 2126   328.6( 654) 1.3241 23.994 2415 1.565 3780 2.344 0.36774 14.637 0.1554   2250 21.601 153.7 0.56 0.19
COMBUSTOR       0     25    18    2
50.737     52.484 2927   609.5( 931) 1.2966 23.992 2824
50.737     11.458 2038   299.3( 624) 1.3274 23.993 2368 1.664 3940 2.342 0.34392 14.637 0.1662   2260 21.057 155.8 0.56 0.19
COMBUSTOR       0     26    19    4
52.147     47.974 3046   599.0( 971) 1.2905 24.136 2846
52.147      9.478 2080   259.9( 636) 1.3241 24.137 2382 1.729 4119 2.358 0.29312 14.637 0.1950   2347 18.763 160.3 0.56 0.88
COMBUSTOR       0     27    20    4
54.247     49.601 2937   584.2( 937) 1.2952 23.978 2809
54.247      6.175 1780   183.6( 539) 1.3368 23.978 2221 2.016 4477 2.353 0.24102 14.684 0.2379   2420 16.769 164.8 0.57 0.22
COMBUSTOR       0     28    21    4
54.747     47.638 2975   581.6( 950) 1.2933 24.022 2822
54.747      5.992 1811   177.7( 549) 1.3350 24.022 2237 2.010 4496 2.359 0.23117 14.684 0.2480   2432 16.151 168.7 0.57 0.24
COMBUSTOR       0     29    22    4
55.497     50.263 2907   577.9( 926) 1.2964 23.965 2796
55.497      5.077 1669   151.7( 503) 1.3419 23.966 2155 2.143 4616 2.348 0.21791 14.684 0.2631   2450 15.638 166.8 0.57 0.22
COMBUSTOR       0     30    23    3
55.760     51.765 2875   576.6( 916) 1.2979 23.938 2784
55.760      4.756 1608   142.2( 484) 1.3451 23.939 2119 2.200 4662 2.343 0.21364 14.684 0.2684   2455 15.480 167.2 0.57 0.21
COMBUSTOR       0     31    24    2
56.257     48.386 2871   574.4( 914) 1.2980 23.940 2782
56.257      3.347 1492   104.2( 447) 1.3510 23.940 2046 2.371 4850 2.348 0.16858 14.684 0.3401   2505 12.707 170.6 0.57 0.21
COMBUSTOR       0     32    25    5
57.682     37.811 3093   568.6( 989) 1.2871 24.171 2861
57.682      3.718 1783   112.9( 538) 1.3345 24.173 2212 2.159 4775 2.385 0.15582 14.684 0.3679   2530 11.564 172.3 0.57 0.30
COMBUSTOR       0     33    26    4
57.737     34.736 3186   568.4(1021) 1.2824 24.266 2893
57.737      4.051 1927   125.8( 584) 1.3274 24.268 2289 2.056 4706 2.399 0.15540 14.684 0.3689   2531 11.366 172.3 0.57 0.34
COMBUSTOR       0     34    27    3
57.877     34.482 3192   568.0(1023) 1.2820 24.273 2895
57.877      4.030 1932   124.9( 586) 1.3271 24.276 2292 2.055 4709 2.400 0.15429 14.684 0.3716   2533 11.290 172.5 0.57 0.34
COMBUSTOR       0     35    28    7
57.957     38.885 3076   567.7( 983) 1.2879 24.158 2856
57.957      3.635 1749   106.9( 527) 1.3361 24.159 2193 2.189 4602 2.382 0.15599 14.684 0.3675   2534 11.640 172.5 0.57 0.29
COMBUSTOR       0     36    29    3
58.237     39.708 3063   566.8( 979) 1.2865 24.147 2851
58.237      3.550 1721   101.6( 518) 1.3375 24.149 2177 2.216 4824 2.379 0.15553 14.684 0.3686   2537 11.661 172.8 0.57 0.29
COMBUSTOR       0     37    30    4
58.463     46.199 2936   566.0( 935) 1.2966 24.025 2864
58.463      3.074 1517    81.0( 450) 1.3488 24.025 2058 2.394 4926 2.356 0.15516 14.684 0.3695   2539 11.660 172.9 0.57 0.24
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READING = 0088  BLOCK = 169  TIME = 270.601  MACH  7.2  PT = 998.499  TT = 3269.1                                          PAGE  3

                  P       T       H            GAMMA  MOLWT  SONV  MACH  VEL    S     W/A      W      A/AC   MOMTM    Q     IVAC  PHI  ETAC
COMBUSTOR         0      38   31    9
59.187      112.681    2498   563.9( 788)  1.3148 23.619 2629
59.187        1.550     813    14.3( 240)  1.3896 23.619 1542 3.400 5244 2.239 0.15277 14.684 0.3753   2542 12.451 173.1 0.57 0.08
COMBUSTOR         0      39   32    5
60.207       72.251    2664   561.1( 844)  1.3071 23.780 2698
60.207        2.075    1079    34.9( 319)  1.3752 23.780 1762 2.913 5131 2.294 0.15180 14.680 0.3777   2543 12.105 173.2 0.57 0.14
COMBUSTOR         0      40   33    6
62.217       31.608    3348   556.1(1075)  1.2734 24.464 2943
62.217        4.662    2163   132.8( 660)  1.3159 24.469 2405 1.914 4602 2.416 0.15708 14.684 0.3650   2536 11.235 172.7 0.57 0.41
COMBUSTOR         0      41   34    4
63.637       33.652    3278   552.7(1051)  1.2771 24.402 2921
63.637        4.556    2068   123.2( 629)  1.3203 24.406 2358 1.966 4636 2.406 0.16130 14.684 0.3593   2531 11.624 172.3 0.57 0.39
COMBUSTOR         0      42   35    5
66.101       26.082    3580   546.1(1155)  1.2594 24.736 3010
66.101        5.651    2564   171.1( 793)  1.2981 24.749 2586 1.675 4332 2.444 0.15293 14.684 0.3749   2520 10.295 171.6 0.57 0.52
COMBUSTOR         0      43   36    4
66.477       22.622    3737   545.0(1209)  1.2487 24.909 3052
66.477        5.959    2819   197.7( 879)  1.2867 24.930 2689 1.550 4169 2.463 0.14218 14.684 0.4032   2518  9.211 171.5 0.57 0.59
COMBUSTOR    REGEN       44   37    4
66.477       22.622    4179   736.5(1373)  1.2221 24.858 3196
66.477        6.999    3327   385.5(1060)  1.2655 24.923 2898 1.446 4191 2.511 0.14218 14.684 0.4032   2636  9.260 179.5 0.57 0.59
NOZZLE   AE              45   38    5
88.713       22.622    3737   545.0(1181)  1.2487 24.909 3052
88.713        0.444    1518  -240.1( 444)  1.3396 24.931 2014 3.113 6268 2.463 0.02960 14.684 1.9371   3081  2.883 209.8 0.57 0.59
NOZZLE   PO              46   39    5
88.713       22.622    3737   545.0(1181)  1.2487 24.909 3052
88.713        0.153    1152  -352.5( 331)  1.3611 24.931 1768 3.790 6702 2.463 0.01441 14.684 3.9798   3215  1.500 218.9 0.57 0.59
NOZZLE   AE REGEN        47   40    5
88.713       22.622    4179   736.5(1373)  1.2221 24.858 3196
88.713        0.504    1822  -142.8( 541)  1.3245 24.931 2190 3.024 6633 2.511 0.02960 14.684 1.9371   3277  3.051 223.2 0.57 0.59
NOZZLE   PO REGEN        48   41    5
88.713       22.622    4179   736.5(1373)  1.2221 24.858 3196
88.713        0.153    1350  -292.1( 392)  1.3492 24.931 1906 3.764 7174 2.511 0.01315 14.684 4.3584   3446  1.467 234.7 0.57 0.59
FICTIVE COMBUSTR         67   60    0
66.477      313.967    4662   545.0(1533)  1.2090 25.984 3288
66.477        0.153     823  -823.2( 227)  1.3708 26.092 1466 5.644 8274 2.287 0.02605 14.684 2.2007   3863  3.350 263.1 0.57 1.00
FICTIVE NOZZLE           68   61    0
88.713       16.040    3672   519.8(1189)  1.2506 24.911 3027
88.713        0.520    1685  -187.1( 497)  1.3308 24.931 2114 2.813 5947 2.484 0.02960 14.684 1.9371   2972  2.735 202.4 0.57 0.59
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XABB	P-IH	P-OH	PCA	QOX	G-IB	G-OB	CA+ALL	P-IB/P80	P-IB/PTO	P-OB/P80	P-CB/PTO
6.981E-01	6.900E-01	0.000	-2.747E-01	0.000	0.000	0.000	2.070E-02	4.496E 00	6.910E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.496E 00	6.910E-04	0.000	0.000
3.070E 01	1.020E 00	0.000	-9.228E 01	0.000	0.000	0.000	5.053E 02	6.647E 00	1.022E-03	0.000	0.000
3.508E 01	1.898E 00	0.000	-1.868E 02	0.000	0.000	0.000	6.604E 02	1.237E 01	1.901E-03	0.000	0.000
3.555E 01	2.170E 00	0.000	-2.094E 02	0.000	0.000	0.000	7.013E 02	1.414E 01	2.173E-03	0.000	0.000
3.606E 01	2.065E 00	0.000	-2.269E 02	-1.657E 02	-1.657E 02	0.000	7.246E 02	1.346E 01	2.068E-03	0.000	0.000
3.648E 01	2.259E 00	0.000	-2.454E 02	-1.697E 02	-1.697E 02	0.000	7.443E 02	1.472E 01	2.262E-03	0.000	0.000
3.661E 01	2.292E 00	3.260E 00	-2.854E 02	-1.711E 02	-1.711E 02	0.000	7.507E 02	1.494E 01	2.296E-03	2.124E 01	3.265E-03
3.662E 01	2.294E 00	3.275E 00	-2.855E 02	-1.711E 02	-1.711E 02	0.000	7.509E 02	1.495E 01	2.297E-03	2.134E 01	3.280E-03
3.701E 01	2.390E 00	4.268E 00	-2.875E 02	-1.750E 02	-1.750E 02	0.000	7.913E 02	1.557E 01	2.394E-03	2.781E 01	4.275E-03
3.729E 01	2.280E 00	4.975E 00	-2.872E 02	-1.779E 02	-1.779E 02	0.000	8.204E 02	1.486E 01	2.283E-03	3.242E 01	4.982E-03
3.803E 01	1.985E 00	8.267E 00	-2.707E 02	-1.861E 02	-1.861E 02	0.000	9.008E 02	1.293E 01	1.988E-03	5.387E 01	8.280E-03
3.875E 01	6.590E 00	1.144E 01	-2.684E 02	-2.540E 02	-2.012E 02	-5.280E 01	9.802E 02	4.294E 01	6.600E-03	7.457E 01	1.146E-02
3.875E 01	6.610E 00	1.143E 01	-2.684E 02	-2.543E 02	-2.013E 02	-5.295E 01	9.806E 02	4.307E 01	6.620E-03	7.451E 01	1.145E-02
3.901E 01	8.280E 00	1.059E 01	-2.729E 02	-2.759E 02	-2.103E 02	-6.563E 01	1.010E 03	5.396E 01	8.292E-03	6.901E 01	1.061E-02
3.950E 01	1.152E 01	9.003E 00	-2.906E 02	-3.227E 02	-2.333E 02	-8.945E 01	1.066E 03	7.507E 01	1.154E-02	5.866E 01	9.016E-03
3.977E 01	1.133E 01	8.137E 00	-3.012E 02	-3.517E 02	-2.494E 02	-1.024E 02	1.097E 03	7.382E 01	1.135E-02	5.303E 01	8.150E-03
4.000E 01	1.116E 01	7.828E 00	-3.079E 02	-3.793E 02	-2.657E 02	-1.136E 02	1.124E 03	7.274E 01	1.118E-02	5.101E 01	7.839E-03
4.024E 01	1.344E 01	7.512E 00	-3.169E 02	-4.089E 02	-2.838E 02	-1.250E 02	1.151E 03	8.759E 01	1.346E-02	4.895E 01	7.524E-03
4.040E 01	1.501E 01	1.096E 01	-3.228E 02	-4.296E 02	-2.967E 02	-1.329E 02	1.170E 03	9.781E 01	1.503E-02	7.140E 01	1.097E-02
4.041E 01	1.511E 01	1.117E 01	-3.230E 02	-4.309E 02	-2.975E 02	-1.334E 02	1.172E 03	9.843E 01	1.513E-02	7.278E 01	1.119E-02
4.075E 01	1.835E 01	1.829E 01	-3.282E 02	-4.746E 02	-3.251E 02	-1.495E 02	1.211E 03	1.195E 02	1.837E-02	1.192E 02	1.831E-02
4.124E 01	2.306E 01	2.000E 00	-3.556E 02	-5.402E 02	-3.676E 02	-1.726E 02	1.269E 03	1.503E 02	2.309E-02	1.303E 01	2.003E-03
4.150E 01	2.559E 01	2.065E 00	-3.857E 02	-5.766E 02	-3.918E 02	-1.848E 02	1.300E 03	1.667E 02	2.563E-02	1.346E 01	2.068E-03
4.246E 01	4.710E 01	2.301E 00	-5.350E 02	-7.368E 02	-4.849E 02	-2.519E 02	1.414E 03	3.069E 02	4.717E-02	1.500E 01	2.305E-03
4.272E 01	4.756E 01	2.366E 00	-5.830E 02	-7.893E 02	-5.110E 02	-2.782E 02	1.445E 03	3.099E 02	4.763E-02	1.542E 01	2.369E-03
4.273E 01	4.757E 01	2.368E 00	-5.847E 02	-7.913E 02	-5.120E 02	-2.793E 02	1.446E 03	3.100E 02	4.765E-02	1.543E 01	2.372E-03
4.280E 01	4.769E 01	2.384E 00	-5.963E 02	-8.048E 02	-5.185E 02	-2.864E 02	1.454E 03	3.107E 02	4.776E-02	1.554E 01	2.388E-03
4.431E 01	5.032E 01	2.611E 01	-7.695E 02	-1.151E 03	-6.641E 02	-4.870E 02	1.636E 03	3.279E 02	5.040E-02	1.702E 02	2.615E-02
4.480E 01	5.117E 01	3.380E 01	-8.026E 02	-1.273E 03	-7.096E 02	-5.630E 02	1.696E 03	3.335E 02	5.125E-02	2.202E 02	3.385E-02
4.552E 01	4.340E 01	4.504E 01	-8.170E 02	-1.448E 03	-7.739E 02	-6.744E 02	1.783E 03	2.828E 02	4.347E-02	2.935E 02	4.511E-02
4.623E 01	3.565E 01	3.917E 01	-7.813E 02	-1.616E 03	-8.353E 02	-7.811E 02	1.871E 03	2.323E 02	3.570E-02	2.552E 02	3.923E-02
4.626E 01	3.535E 01	3.894E 01	-7.787E 02	-1.623E 03	-8.377E 02	-7.851E 02	1.874E 03	2.303E 02	3.540E-02	2.537E 02	3.900E-02
4.731E 01	2.396E 01	3.031E 01	-6.952E 02	-1.851E 03	-9.229E 02	-9.278E 02	2.004E 03	1.561E 02	2.400E-02	1.975E 02	3.036E-02
4.811E 01	1.785E 01	2.374E 01	-6.212E 02	-2.016E 03	-9.841E 02	-1.032E 03	2.103E 03	1.163E 02	1.788E-02	1.547E 02	2.378E-02
4.876E 01	1.842E 01	1.842E 01	-5.571E 02	-2.147E 03	-1.031E 03	-1.116E 03	2.184E 03	1.201E 02	1.845E-02	1.201E 02	1.845E-02
5.021E 01	1.332E 01	1.332E 01	-4.384E 02	-2.394E 03	-1.129E 03	-1.265E 03	2.365E 03	8.682E 01	1.334E-02	8.682E 01	1.334E-02
5.074E 01	1.146E 01	1.146E 01	-4.042E 02	-2.463E 03	-1.162E 03	-1.301E 03	2.431E 03	7.467E 01	1.148E-02	7.467E 01	1.148E-02
5.215E 01	9.475E 00	9.475E 00	-3.268E 02	-2.616E 03	-1.243E 03	-1.373E 03	2.609E 03	6.174E 01	9.489E-03	6.174E 01	9.489E-03
5.425E 01	6.175E 00	6.175E 00	-2.406E 02	-2.803E 03	-1.345E 03	-1.458E 03	2.875E 03	4.024E 01	6.184E-03	4.024E 01	6.184E-03
5.475E 01	5.992E 00	5.992E 00	-2.248E 02	-2.842E 03	-1.366E 03	-1.476E 03	2.939E 03	3.904E 01	6.001E-03	3.904E 01	6.001E-03
5.550E 01	5.077E 00	5.077E 00	-2.034E 02	-2.897E 03	-1.396E 03	-1.501E 03	3.035E 03	3.308E 01	5.085E-03	3.308E 01	5.085E-03
5.576E 01	4.756E 00	4.756E 00	-1.968E 02	-2.915E 03	-1.405E 03	-1.509E 03	3.068E 03	3.099E 01	4.763E-03	3.099E 01	4.763E-03
5.626E 01	2.544E 00	4.150E 00	-1.451E 02	-2.948E 03	-1.423E 03	-1.524E 03	3.102E 03	1.658E 01	2.548E-03	2.704E 01	4.156E-03
5.768E 01	3.718E 00	3.718E 00	-1.171E 02	-3.032E 03	-1.471E 03	-1.562E 03	3.209E 03	2.423E 01	3.724E-03	2.423E 01	3.724E-03
5.774E 01	4.400E 00	3.702E 00	-1.161E 02	-3.035E 03	-1.472E 03	-1.563E 03	3.217E 03	2.867E 01	4.407E-03	2.412E 01	3.707E-03
5.788E 01	4.400E 00	3.659E 00	-1.137E 02	-3.042E 03	-1.476E 03	-1.566E 03	3.234E 03	2.867E 01	4.407E-03	2.384E 01	3.665E-03
5.796E 01	3.635E 00	3.635E 00	-1.122E 02	-3.046E 03	-1.478E 03	-1.568E 03	3.245E 03	2.369E 01	3.640E-03	2.369E 01	3.640E-03
5.824E 01	3.550E 00	3.550E 00	-1.075E 02	-3.060E 03	-1.486E 03	-1.574E 03	3.280E 03	2.313E 01	3.555E-03	2.313E 01	3.555E-03
5.846E 01	3.074E 00	3.074E 00	-1.043E 02	-3.070E 03	-1.492E 03	-1.578E 03	3.309E 03	2.003E 01	3.079E-03	2.003E 01	3.079E-03
5.919E 01	1.550E 00	1.550E 00	-9.804E 01	-3.101E 03	-1.509E 03	-1.592E 03	3.402E 03	1.010E 01	1.552E-03	1.010E 01	1.552E-03
6.021E 01	2.075E 00	2.075E 00	-9.384E 01	-3.142E 03	-1.529E 03	-1.613E 03	3.532E 03	1.352E 01	2.078E-03	1.352E 01	2.078E-03
6.222E 01	4.662E 00	4.662E 00	-9.305E 01	-3.217E 03	-1.556E 03	-1.661E 03	3.790E 03	3.038E 01	4.670E-03	3.038E 01	4.670E-03
6.364E 01	4.556E 00	4.556E 00	-9.305E 01	-3.266E 03	-1.571E 03	-1.695E 03	3.972E 03	2.969E 01	4.563E-03	2.969E 01	4.563E-03
6.610E 01	5.651E 00	5.651E 00	-9.305E 01	-3.363E 03	-1.600E 03	-1.763E 03	4.289E 03	3.683E 01	5.660E-03	3.683E 01	5.660E-03
6.648E 01	6.100E 00	5.818E 00	-9.305E 01	-3.379E 03	-1.605E 03	-1.775E 03	4.337E 03	3.975E 01	6.109E-03	3.791E 01	5.827E-03

READING = 0088 BLOCK = 169 TIME = 270.601 MACH 7.2 PT = 998.499 TT = 3269.1

XABS	P-IB	P-OB	PRA	DOX	Q-IB	Q-OB	CAWALL	P-IB/P80	P-IB/PT0	P-OB/P80	P-OB/PT0
6.652E 01	6.109E 00	5.836E 00	-9.305E 01	-3.381E 03	-1.605E 03	-1.776E 03	4.342E 03	3.975E 01	6.109E-03	3.803E 01	5.845E-03
6.672E 01	5.933E 00	5.925E 00	-9.305E 01	-3.390E 03	-1.608E 03	-1.782E 03	4.368E 03	3.866E 01	5.942E-03	3.861E 01	5.934E-03
6.838E 01	4.545E 00	4.190E 00	-3.600E 01	-3.456E 03	-1.626E 03	-1.830E 03	4.584E 03	2.962E 01	4.552E-03	2.730E 01	4.196E-03
6.905E 01	3.633E 00	3.457E 00	4.410E 01	-3.479E 03	-1.632E 03	-1.806E 03	4.665E 03	2.367E 01	3.639E-03	2.253E 01	3.463E-03
6.982E 01	2.585E 00	2.175E 00	1.273E 02	-3.502E 03	-1.638E 03	-1.844E 03	4.760E 03	1.684E 01	2.589E-03	1.417E 01	2.178E-03
7.050E 01	2.069E 00	9.750E-01	1.799E 02	-3.523E 03	-1.643E 03	-1.881E 03	4.848E 03	1.346E 01	2.068E-03	6.353E 00	9.765E-04
7.115E 01	1.625E 00	9.733E-01	2.120E 02	-3.540E 03	-1.646E 03	-1.894E 03	4.922E 03	1.059E 01	1.627E-03	6.342E 00	9.747E-04
7.253E 01	9.150E-01	9.693E-01	2.652E 02	-3.571E 03	-1.653E 03	-1.918E 03	5.048E 03	5.962E 00	9.160E-04	6.317E 00	9.708E-04
7.406E 01	4.778E-01	9.650E-01	3.042E 02	-3.596E 03	-1.659E 03	-1.937E 03	5.273E 03	3.114E 00	4.786E-04	6.288E 00	9.664E-04
7.421E 01	4.350E-01	8.383E-01	3.070E 02	-3.598E 03	-1.659E 03	-1.939E 03	5.290E 03	2.835E 00	4.357E-04	5.463E 00	8.396E-04
7.496E 01	4.855E-01	2.050E-01	3.200E 02	-3.610E 03	-1.661E 03	-1.949E 03	5.374E 03	3.164E 00	4.862E-04	1.336E 00	2.053E-04
7.496E 01	4.857E-01	2.016E-01	3.244E 02	-3.610E 03	-1.661E 03	-1.949E 03	5.375E 03	3.165E 00	4.865E-04	1.314E 00	2.019E-04
7.629E 01	5.750E-01	0.000	3.356E 02	-3.634E 03	-1.660E 03	-1.970E 03	5.426E 03	3.747E 00	5.759E-04	0.000	0.000
7.914E 01	2.900E-01	0.000	3.529E 02	-3.638E 03	-1.668E 03	-1.970E 03	5.525E 03	1.890E 00	2.904E-04	0.000	0.000
8.304E 01	3.050E-01	0.000	3.656E 02	-3.749E 03	-1.670E 03	-2.078E 03	5.630E 03	1.987E 00	3.055E-04	0.000	0.000
8.585E 01	3.300E-01	0.000	3.727E 02	-3.749E 03	-1.671E 03	-2.078E 03	5.684E 03	2.150E 00	3.305E-04	0.000	0.000
8.871E 01	5.400E-01	0.000	3.832E 02	-3.750E 03	-1.672E 03	-2.078E 03	5.707E 03	3.519E 00	5.408E-04	0.000	0.000
8.871E 01	5.404E-01	0.000	3.832E 02	-3.750E 03	-1.672E 03	-2.078E 03	5.707E 03	3.522E 00	5.413E-04	0.000	0.000

READING ● 00A8 BLOCK = 169 TIME = 270.601 MACH 7.2 PT = 998.499 TT = 3269.1

X	UDRAG	CDRAG	CF	HC
4.040E 01	8.486E 01	8.486E 01	2.261E-03	3.419E-02
4.041E 01	1.722E-01	8.503E 01	3.012E-03	3.751E-02
4.075E 01	5.819E 00	9.085E 01	2.505E-03	5.365E-02
4.124E 01	8.075E 00	9.893E 01	2.791E-03	3.828E-02
4.190E 01	4.408E 00	1.033E 02	2.600E-03	4.275E-02
4.246E 01	1.418E 01	1.175E 02	2.879E-03	5.566E-02
4.272E 01	3.756E 00	1.213E 02	3.430E-03	4.899E-02
4.273E 01	1.404E-01	1.214E 02	3.048E-03	5.519E-02
4.280E 01	8.648E-01	1.223E 02	2.986E-03	5.611E-02
4.431E 01	1.677E 01	1.390E 02	3.276E-03	5.456E-02
4.480E 01	4.064E 00	1.431E 02	3.360E-03	5.229E-02
4.552E 01	5.465E 00	1.486E 02	3.558E-03	4.785E-02
4.623E 01	5.640E 00	1.542E 02	3.310E-03	5.157E-02
4.626E 01	2.293E-01	1.544E 02	3.282E-03	5.199E-02
4.731E 01	9.115E 00	1.636E 02	3.098E-03	4.952E-02
4.811E 01	7.395E 00	1.710E 02	2.999E-03	4.418E-02
4.876E 01	5.888E 00	1.768E 02	2.969E-03	4.059E-02
5.021E 01	1.210E 01	1.889E 02	2.900E-03	3.262E-02
5.074E 01	4.166E 00	1.931E 02	2.977E-03	2.859E-02
5.215E 01	1.034E 01	2.034E 02	2.871E-03	2.503E-02
5.425E 01	1.355E 01	2.170E 02	2.858E-03	1.801E-02
5.475E 01	2.949E 00	2.199E 02	2.765E-03	1.790E-02
5.550E 01	4.205E 00	2.242E 02	2.757E-03	1.576E-02
5.576E 01	1.428E 00	2.256E 02	2.692E-03	1.524E-02
5.626E 01	1.238E 00	2.268E 02	2.549E-03	1.145E-02
5.768E 01	3.318E 00	2.301E 02	2.529E-03	1.219E-02
5.774E 01	2.131E-01	2.303E 02	2.748E-03	1.223E-02
5.788E 01	5.603E-01	2.309E 02	2.818E-03	1.194E-02
5.796E 01	3.546E-01	2.313E 02	3.225E-03	9.977E-03
5.824E 01	1.231E 00	2.325E 02	2.697E-03	1.124E-02
5.846E 01	9.099E-01	2.334E 02	2.665E-03	1.021E-02
5.919E 01	2.922E 00	2.363E 02	2.520E-03	6.366E-03
6.021E 01	3.577E 00	2.399E 02	1.936E-03	9.069E-03
6.222E 01	6.471E 00	2.464E 02	2.364E-03	1.473E-02
6.364E 01	5.473E 00	2.518E 02	2.893E-03	1.250E-02
6.610E 01	1.008E 01	2.619E 02	2.923E-03	1.421E-02
6.648E 01	1.432E 00	2.634E 02	3.164E-03	1.353E-02
6.652E 01	1.920E-01	2.635E 02	3.263E-03	1.326E-02
6.672E 01	7.707E-01	2.643E 02	3.260E-03	1.321E-02
6.838E 01	6.217E 00	2.705E 02	3.192E-03	1.102E-02
6.905E 01	2.173E 00	2.727E 02	3.151E-03	9.649E-03
6.982E 01	2.228E 00	2.749E 02	3.079E-03	7.369E-03
7.054E 01	1.689E 00	2.766E 02	3.002E-03	5.384E-03
7.115E 01	1.206E 00	2.778E 02	2.974E-03	4.801E-03
7.253E 01	2.367E 00	2.802E 02	2.915E-03	3.781E-03
7.406E 01	2.194E 00	2.823E 02	2.865E-03	3.088E-03
7.421E 01	1.814E-01	2.825E 02	2.843E-03	2.808E-03
7.496E 01	7.112E-01	2.832E 02	2.734E-03	1.752E-03
7.496E 01	1.096E-03	2.832E 02	2.733E-03	1.746E-03
7.629E 01	4.192E-01	2.837E 02	2.815E-03	2.588E-03
7.914E 01	7.537E-01	2.844E 02	2.683E-03	1.518E-03
8.304E 01	6.367E-01	2.851E 02	2.674E-03	1.567E-03
8.585E 01	3.438E-01	2.854E 02	2.675E-03	1.657E-03
8.871E 01	1.736E-01	2.856E 02	2.747E-03	2.412E-03
8.871E 01	0.000	2.856E 02	2.747E-03	2.413E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	95.	(LBF)
MEASURED THRUST	490.	(LBF)
CALCULATED SPECIFIC IMPULSE	369.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	1907.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.0660	
MEASURED THRUST COEFFICIENT	0.3409	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	3162.	(LBF)
NET THRUST	284.	(LBF)
SPECIFIC IMPULSE	1106.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.1978	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.9	(LBF)
INLET MOMENTUM CHANGE	-407.7	(LBF)
COMBUSTOR FRICTION DRAG	178.5	(LBF)
COMBUSTOR STRUT DRAG	2.72	(LBF)
COMBUSTOR MOMENTUM CHANGE	49.	(LBF)
NOZZLE FRICTION DRAG	22.22	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	454.	(LBF)
NOZZLE PRESSURE INTEGRAL	476.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-719.	(LBF)
TOTAL STRUT DRAG	2.72	(LBF)
CAVITY FORCE	-657.	(LBF)
CALCULATED LOAD CELL FORCE	-1281.	(LBF)
MEASURED LOAD CELL FORCE	-886.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0,	

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9872	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0997	
DELTA PT2	0.0883	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3144	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1010	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9017	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9120	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9305	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8814	
ENTHALPY AT PO - SUPERSONIC	-26.13	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	13.35	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0178
EQUIVALENCE RATIO	0.568
COMBUSTOR EFFICIENCY	0.589
TOTAL PRESSURE RATIO	0.0721
COMBUSTOR EFFECTIVENESS	0.5327
INJECTOR DISCHARGE COEFFICIENTS	0.9210, 0.6819,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9647
NOZZLE COEFFICIENT - CT	0.9007
PROCESS EFFICIENCY	0.9196
KINETIC ENERGY EFFICIENCY	0.9231

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7369	(IN)
INLET THROAT	40.800	(IN)
COWL LEADING EDGE	36.621	(IN)
NOZZLE SHROUD TRAILING EDGE	74.961	(IN)
NOZZLE PLUG TRAILING EDGE	68.713	(IN)
STRUT LEADING EDGE	57.877	(IN)
STRUT TRAILING EDGE	66.477	(IN)
COMBUSTOR EXIT	66.477	(IN)

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.722	B
1C	44.300	
2A	50.197	
2C	46.250	
3A	55.487	
3B	57.672	
4	46.222	

Reading 88

t = 271.50 sec.

2/2/75

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	F	TVAC	PHT	ETAC
WIND TUNNEL		1	0 6														
0.000	998.749	3265	751.4(874)	1.2852	28.903	2687											
0.000	0.154	320	-52.4(77)	1.3971	28.901	876	7.236	6342	1.834	0.05697	14.407	0.9873	2879	5.615	199.8		
SPIKE TIP NS		2	0 6														
0.600	11.375	3264	751.4(874)	1.2843	28.901	2685											
0.600	10.528	3208	734.1(857)	1.2861	28.901	2664	0.348	928	2.141	0.05697	14.407	0.9873	3078	0.822	213.6		
WIND TUNNEL		3	0 0														
0.000	998.749	3265	751.4(874)	1.2852	28.903	2687											
0.000	0.172	330	-49.8(79)	1.3974	28.901	891	7.108	6332	1.834	0.06171	15.603	0.9873	3114	6.072	199.6		
SPIKE TIP NS		4	0 0														
0.600	11.375	3264	751.4(874)	1.2843	28.901	2685											
0.600	10.363	3197	730.7(854)	1.2865	28.901	2660	0.383	1018	2.141	0.06171	15.603	0.9873	3114	0.976	199.6		
INLET THROAT		5	0 4														
40.400	315.217	3164	720.2(844)	1.2883	28.902	2648											
40.400	10.498	1383	211.5(341)	1.3552	28.902	1796	2.810	5045	1.903	0.71625	14.407	0.0785	2470	56.156	171.5		
INLET UPNRBK		6	0 3														
40.400	315.217	3164	720.2(844)	1.2883	28.902	2648											
40.400	9.059	1330	197.8(327)	1.3584	28.901	1763	2.900	5113	1.903	0.65114	14.407	0.0864	2490	51.736	172.8		
INLET DNNRBK		7	0 4														
40.400	100.927	3163	720.2(844)	1.2882	28.902	2648											
40.400	87.962	3067	690.7(815)	1.2912	28.902	2610	0.465	1214	1.982	0.65114	14.407	0.0864	2490	12.285	172.8		
COMBUSTOR		0 8	1 18														
40.410	227.869	2991	733.2(883)	1.2975	25.801	2735											
40.410	13.181	1486	257.5(411)	1.3532	25.801	1968	2.479	4879	2.091	0.72273	14.539	0.0785	2470	54.797	169.9	0.30	0.02
COMBUSTOR		0 9	2 5														
40.747	160.290	3297	730.1(978)	1.2830	26.134	2837											
40.747	18.411	1985	302.6(558)	1.3275	26.136	2239	2.066	4625	2.142	0.72539	14.539	0.0783	2459	52.137	169.1	0.30	0.24
COMBUSTOR		0 10	3 21														
41.237	191.405	2992	725.3(882)	1.2971	25.826	2733											
41.237	12.532	1536	264.3(425)	1.3503	25.826	1998	2.404	4803	2.104	0.71960	14.539	0.0789	2424	53.715	166.7	0.30	0.04
COMBUSTOR		0 11	4 21														
41.500	180.266	2940	722.7(866)	1.2995	25.781	2714											
41.500	13.826	1567	288.2(435)	1.3491	25.781	2019	2.309	4663	2.103	0.71275	14.539	0.0796	2389	51.649	164.3	0.30	0.01
COMBUSTOR		0 12	5 4														
42.460	94.047	3184	711.3(942)	1.2874	26.072	2796											
42.460	25.114	2344	434.8(670)	1.3158	26.073	2425	1.534	3719	2.172	0.67222	14.539	0.0844	2224	38.856	153.0	0.30	0.20
COMBUSTOR		0 13	6 21														
42.722	87.920	2760	720.9(883)	1.3085	23.464	2766											
42.722	25.329	2040	469.5(633)	1.3329	23.464	2400	1.478	3547	2.299	0.66898	14.663	0.0856	2171	36.872	148.1	0.57	0.01
COMBUSTOR		0 14	7 2														
42.732	87.723	2756	720.8(882)	1.3087	23.460	2765											
42.732	25.337	2038	470.2(633)	1.3330	23.460	2399	1.476	3541	2.298	0.66834	14.663	0.0857	2170	36.778	148.0	0.57	0.01
COMBUSTOR		0 15	8 21														
42.797	86.024	2742	719.9(877)	1.3093	23.450	2759											
42.797	25.390	2038	474.2(633)	1.3331	23.450	2400											
							1.461	3506	2.298	0.66586	14.663	0.0860	2157	36.280	147.1	0.57	0.00
COMBUSTOR		0 16	9 21														
44.310	63.270	2673	695.6(852)	1.3116	23.449	2726											
44.310	38.507	2372	589.5(747)	1.3215	23.449	2578	0.894	2304	2.315	0.61638	14.663	0.0929	1966	22.071	134.1	0.57	0.00
COMBUSTOR		0 17	10 21														
44.800	57.910	3204	687.1(1032)	1.2863	23.973	2923											
44.800	42.755	2993	609.3(956)	1.2935	23.974	2833	0.697	1974	2.371	0.60868	14.663	0.0941	1930	18.677	131.6	0.57	0.22
COMBUSTOR		0 18	11 21														
45.517	60.270	2698	674.9(860)	1.3098	23.525	2733											
45.517	44.605	2512	608.7(795)	1.3157	23.525	2643	0.689	1820	2.321	0.60444	14.663	0.0947	1912	17.100	130.4	0.57	0.03

READING = 0088 BLOCK = 170 TIME = 271.501 MACH 7.2 PT = 998.749 TT = 3264.7

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	*/A	W	A/AC	MOPIM	G	TVAC	PHT	ETAC
COMBUSTOR	0	19	12 21														
46.232	60.044	2594	663.3(825)	1.3139	23.460	2688											
46.232	37.735	2319	566.7(729)	1.3231	23.460	2550	0.862	2199	2.309	0.58768	14.663	0.0974	1943	20.080	132.5	0.57	0.00
COMBUSTOR	0	20	13 21														
46.260	60.144	2582	662.8(821)	1.3145	23.450	2683											
46.260	37.465	2303	564.9(723)	1.3238	23.450	2542	0.871	2214	2.307	0.58619	14.663	0.0977	1946	20.165	132.7	0.57	0.00
COMBUSTOR	0	21	14 3														
47.310	60.207	2614	647.1(831)	1.3124	23.520	2693											
47.310	27.375	2159	488.6(673)	1.3279	23.520	2462	1.144	2817	2.310	0.54341	14.663	0.1053	2022	23.786	137.9	0.57	0.03
COMBUSTOR	0	22	15 4														
48.110	60.022	2673	635.8(850)	1.3093	23.602	2715											
48.110	20.877	2069	425.9(641)	1.3301	23.602	2408	1.346	3241	2.316	0.49937	14.663	0.1146	2090	25.148	142.5	0.57	0.06
COMBUSTOR	0	23	16 4														
48.757	57.144	2791	626.8(889)	1.3036	23.735	2760											
48.757	18.450	2128	395.1(659)	1.3263	23.735	2432	1.400	3404	2.331	0.45330	14.663	0.1263	2148	23.983	146.5	0.57	0.12
COMBUSTOR	0	24	17 4														
50.207	52.478	2939	609.7(938)	1.2961	23.922	2814											
50.207	13.397	2127	324.4(656)	1.3240	23.922	2419	1.562	3778	2.350	0.36838	14.663	0.1554	2255	21.631	153.8	0.57	0.20
COMBUSTOR	0	25	18 2														
50.737	52.440	2928	605.0(934)	1.2964	23.923	2809											
50.737	11.550	2043	295.3(628)	1.3271	23.924	2374	1.658	3936	2.348	0.34452	14.663	0.1662	2286	21.076	155.9	0.57	0.20
COMBUSTOR	0	26	19 4														
52.147	47.861	3051	594.3(975)	1.2902	24.071	2851											
52.147	9.575	2090	256.0(641)	1.3235	24.072	2390	1.721	4114	2.365	0.29363	14.663	0.1950	2353	18.775	160.5	0.57	0.26
COMBUSTOR	0	27	20 4														
54.247	49.693	2936	579.2(939)	1.2951	23.908	2812											
54.247	6.200	1780	178.0(541)	1.3367	23.909	2225	2.014	4481	2.358	0.24144	14.710	0.2379	2427	16.814	165.0	0.58	0.22
COMBUSTOR	0	28	21 4														
54.747	47.609	2977	576.5(953)	1.2931	23.955	2827											
54.747	6.033	1816	172.3(553)	1.3347	23.956	2243	2.005	4497	2.365	0.23157	14.710	0.2480	2439	16.185	165.8	0.58	0.24
COMBUSTOR	0	29	22 4														
55.497	49.446	2925	572.7(935)	1.2954	23.915	2807											
55.497	5.197	1698	148.4(514)	1.3402	23.916	2175	2.119	4608	2.357	0.21829	14.710	0.2631	2457	15.632	167.0	0.58	0.23
COMBUSTOR	0	30	23 3														
55.760	50.538	2900	571.4(927)	1.2966	23.894	2797											
55.760	4.904	1647	139.6(498)	1.3429	23.895	2145	2.167	4648	2.393	0.21402	14.710	0.2684	2462	15.460	167.4	0.58	0.22
COMBUSTOR	0	31	24 3														
56.257	47.039	2896	569.1(925)	1.2966	23.897	2795											
56.257	3.456	1532	101.1(460)	1.3486	23.898	2073	2.334	4839	2.398	0.16887	14.710	0.3401	2514	12.700	170.9	0.58	0.22
COMBUSTOR	0	32	25 5														
57.682	36.092	3151	563.0(1012)	1.2840	24.163	2885											
57.682	3.936	1871	113.3(568)	1.3300	24.165	2262	2.097	4743	2.399	0.15609	14.710	0.3679	2540	11.506	172.6	0.58	0.32
COMBUSTOR	0	33	26 4														
57.737	33.997	3222	562.7(1036)	1.2804	24.234	2909											
57.737	4.185	1978	122.8(602)	1.3248	24.237	2319	2.023	4692	2.409	0.15568	14.710	0.3689	2541	11.351	172.7	0.58	0.35
COMBUSTOR	0	34	27 3														
57.877	33.742	3229	562.2(1038)	1.2800	24.242	2911											
57.877	4.165	1985	121.9(604)	1.3245	24.245	2322	2.022	4694	2.410	0.15456	14.710	0.3716	2543	11.275	172.8	0.58	0.36
COMBUSTOR	0	35	28 7														
57.957	37.010	3137	561.9(1007)	1.2847	24.151	2880											
57.957	3.856	1840	107.3(558)	1.3314	24.153	2244	2.124	4770	2.396	0.15626	14.710	0.3675	2544	11.582	172.9	0.58	0.32
COMBUSTOR	0	36	29 3														
58.237	37.682	3126	560.9(1003)	1.2853	24.143	2876											
58.237	3.775	1814	102.0(549)	1.3326	24.145	2231	2.148	4792	2.394	0.15580	14.710	0.3686	2547	11.603	173.2	0.58	0.32
COMBUSTOR	0	37	30 4														
58.463	43.914	2986	560.2(955)	1.2921	24.008	2827											
58.463	3.246	1591	79.3(478)	1.3444	24.008	2105	2.331	4905	2.370	0.15535	14.710	0.3695	2550	11.850	173.3	0.58	0.26

C. 2

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READING = 0088  BLOCK = 170  TIME = 271.501  MACH  7.2  PT = 998.749  TT = 3260.7                                                          PAGE  3

             P       T      H            GAMMA  MOLWT SONV  MACH  VEL    S      W/A      W     A/AC   MOMTH   Q     IVAC  PHI  ETAC
COMBUSTOR       0  38  31  10
59.187    114.042 2501  557.9( 792) 1.3145 23.557 2634
59.187      1.550  812    8.3( 240) 1.3895 23.597 1543 3.408 5259 2.244 0.15304 14.710 0.3753   2553 12.507 173.6 0.58 0.08
COMBUSTOR       0  39  32   5
60.207     73.053 2667  555.0( 847) 1.3068 23.717 2703
60.207      2.075 1078   25.7( 320) 1.3751 23.717 1763 2.920 5146 2.299 0.15206 14.710 0.3777   2554 12.162 173.6 0.58 0.18
COMBUSTOR       0  40  33   6
62.217     31.739 3357  549.6(1082) 1.2728 24.408 2950
62.217      4.687 2171  124.2( 665) 1.3154 24.413 2412 1.913 4614 2.422 0.15736 14.710 0.3650   2548 11.282 173.2 0.58 0.42
COMBUSTOR       0  41  34   3
63.637     33.013 3321  546.1(1069) 1.2747 24.380 2938
63.637      4.712 2127  119.3( 650) 1.3174 24.384 2390 1.934 4622 2.416 0.16162 14.710 0.3553   2542 11.608 172.8 0.58 0.41
COMBUSTOR       0  42  35   5
66.101     25.298 3671  539.3(1190) 1.2534 24.768 3039
66.101      6.042 2700  175.4( 841) 1.2919 24.785 2645 1.613 4268 2.457 0.15320 14.710 0.3749   2531 10.161 172.1 0.58 0.56
COMBUSTOR       0  43  36   4
66.477     22.384 3791  538.2(1231) 1.2448 24.903 3069
66.477      6.188 2898  196.4( 909) 1.2828 24.927 2723 1.519 4136 2.472 0.14842 14.710 0.4032   2530  9.154 172.0 0.58 0.61
COMBUSTOR  REGEN  44  37   3
66.477     22.384 4201  718.6(1384) 1.2196 24.849 3202
66.477      7.210 3380  376.1(1021) 1.2620 24.919 2917 1.419 4140 2.517 0.14242 14.710 0.4032   2637  9.163 179.3 0.58 0.61
NOZZLE  AE        45  38   5
88.713     22.384 3791  538.2(1203) 1.2448 24.903 3069
88.713      0.456 1564 -256.3( 459) 1.3363 24.929 2042 3.088 6305 2.472 0.02965 14.710 1.9371   3109  2.908 211.4 0.58 0.61
NOZZLE  PO        46  39   5
88.713     22.384 3791  538.2(1203) 1.2448 24.903 3069
88.713      0.154 1181 -374.8( 340) 1.3586 24.929 1789 3.778 6759 2.472 0.01417 14.710 4.0527   3250  1.489 220.9 0.58 0.61
NOZZLE  AE REGEN  47  40   5
88.713     22.384 4201  718.6(1384) 1.2196 24.849 3202
88.713      0.512 1853 -163.5( 552) 1.3223 24.929 2210 3.006 6644 2.517 0.02965 14.710 1.9371   3292  3.061 223.8 0.58 0.61
NOZZLE  PO REGEN  48  41   5
88.713     22.384 4201  718.6(1384) 1.2196 24.849 3202
88.713      0.154 1369 -317.3( 398) 1.3473 24.929 1918 3.753 7290 2.517 0.01302 14.710 4.4105   3465  1.457 235.6 0.58 0.61
FICTIVE COMBUSTR  67  60   0
66.477    315.217 4676  538.2(1542) 1.2082 25.932 3291
66.477      0.154  828 -838.9( 229) 1.3702 26.043 1471 5.642 8301 2.292 0.02595 14.710 2.2130   3882  3.348 263.9 0.58 1.00
FICTIVE NOZZLE    68  61   0
88.713     14.789 3764  528.7(1222) 1.2440 24.901 3058
88.713      0.560 1810 -177.3( 538) 1.3242 24.929 2186 2.718 5943 2.503 0.02965 14.710 1.9371   2995  2.738 203.6 0.58 0.61
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READING = 0086 BLOCK = 170 TIME = 271.501 MACH 7.2 PT = 996.749 TT = 3264.7 PAGE #

XABS	P-IB	P-OB	DPA	SOX	S-IB	S-OB	CAVALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.747E-01	0.000	0.000	0.000	2.470E-02	4.494E 01	6.909E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.294E 01	0.000	0.000	0.000	1.654E 02	4.494E 00	6.919E-04	0.000	0.000
3.070E 01	1.025E 00	0.000	-9.248E 01	0.000	0.000	0.000	5.053E 02	6.676E 00	1.026E-03	0.000	0.000
3.508E 01	1.902E 00	0.000	-1.873E 02	0.000	0.000	0.000	6.804E 02	1.239E 01	1.900E-03	0.000	0.000
3.555E 01	2.170E 00	0.000	-2.059E 02	0.000	0.000	0.000	7.013E 02	1.413E 01	2.173E-03	0.000	0.000
3.606E 01	2.070E 00	0.000	-2.274E 02	-1.763E 02	-1.763E 02	0.000	7.246E 02	1.348E 01	2.073E-03	0.000	0.000
3.648E 01	2.260E 00	0.000	-2.659E 02	-1.806E 02	-1.806E 02	0.000	7.443E 02	1.472E 01	2.263E-03	0.000	0.000
3.661E 01	2.292E 00	3.259E 00	-2.660E 02	-1.820E 02	-1.820E 02	0.000	7.507E 02	1.493E 01	2.295E-03	2.123E 01	3.263E-03
3.662E 01	2.293E 00	3.275E 00	-2.860E 02	-1.820E 02	-1.820E 02	0.000	7.509E 02	1.494E 01	2.296E-03	2.133E 01	3.279E-03
3.701E 01	2.385E 00	4.268E 00	-2.880E 02	-1.862E 02	-1.862E 02	0.000	7.913E 02	1.553E 01	2.388E-03	2.780E 01	4.273E-03
3.729E 01	2.276E 00	4.975E 00	-2.877E 02	-1.893E 02	-1.893E 02	0.000	8.204E 02	1.483E 01	2.279E-03	3.240E 01	4.981E-03
3.803E 01	1.985E 00	8.261E 00	-2.712E 02	-1.980E 02	-1.980E 02	0.000	9.004E 02	1.293E 01	1.987E-03	5.381E 01	8.271E-03
3.875E 01	6.619E 00	1.143E 01	-2.692E 02	-2.671E 02	-2.141E 02	-5.298E 01	9.802E 02	4.312E 01	6.628E-03	7.446E 01	1.145E-02
3.875E 01	6.639E 00	1.142E 01	-2.692E 02	-2.673E 02	-2.142E 02	-5.313E 01	9.806E 02	4.325E 01	6.648E-03	7.439E 01	1.144E-02
3.901E 01	8.320E 00	1.059E 01	-2.737E 02	-2.897E 02	-2.238E 02	-6.586E 01	1.010E 03	5.419E 01	8.330E-03	6.897E 01	1.060E-02
3.950E 01	1.156E 01	9.018E 00	-2.916E 02	-3.381E 02	-2.484E 02	-8.975E 01	1.066E 03	7.528E 01	1.157E-02	5.874E 01	9.029E-03
3.977E 01	1.137E 01	8.162E 00	-3.023E 02	-3.683E 02	-2.656E 02	-1.027E 02	1.097E 03	7.405E 01	1.138E-02	5.317E 01	8.173E-03
4.000E 01	1.120E 01	7.840E 00	-3.090E 02	-3.971E 02	-2.831E 02	-1.140E 02	1.124E 03	7.297E 01	1.122E-02	5.107E 01	7.850E-03
4.024E 01	1.348E 01	7.512E 00	-3.180E 02	-4.280E 02	-3.025E 02	-1.255E 02	1.151E 03	8.777E 01	1.349E-02	4.893E 01	7.522E-03
4.040E 01	1.504E 01	1.101E 01	-3.239E 02	-4.496E 02	-3.163E 02	-1.333E 02	1.170E 03	9.796E 01	1.506E-02	7.173E 01	1.103E-02
4.041E 01	1.513E 01	1.123E 01	-3.241E 02	-4.509E 02	-3.171E 02	-1.338E 02	1.172E 03	9.856E 01	1.515E-02	7.312E 01	1.124E-02
4.075E 01	1.837E 01	1.846E 01	-3.292E 02	-4.966E 02	-3.466E 02	-1.500E 02	1.211E 03	1.196E 02	1.839E-02	1.202E 02	1.848E-02
4.124E 01	2.306E 01	2.000E 00	-3.563E 02	-5.694E 02	-3.922E 02	-1.732E 02	1.269E 03	1.502E 02	2.309E-02	1.303E 01	2.003E-03
4.150E 01	2.559E 01	2.065E 00	-3.865E 02	-6.034E 02	-4.180E 02	-1.854E 02	1.300E 03	1.667E 02	2.562E-02	1.345E 01	2.068E-03
4.246E 01	4.792E 01	2.304E 00	-5.376E 02	-7.700E 02	-5.172E 02	-2.527E 02	1.414E 03	3.122E 02	4.799E-02	1.501E 01	2.307E-03
4.272E 01	4.829E 01	2.369E 00	-5.864E 02	-8.240E 02	-5.449E 02	-2.791E 02	1.445E 03	3.145E 02	4.835E-02	1.543E 01	2.372E-03
4.273E 01	4.830E 01	2.371E 00	-5.881E 02	-8.261E 02	-5.460E 02	-2.802E 02	1.446E 03	3.146E 02	4.836E-02	1.545E 01	2.374E-03
4.280E 01	4.839E 01	2.387E 00	-5.999E 02	-8.401E 02	-5.528E 02	-2.873E 02	1.454E 03	3.152E 02	4.849E-02	1.555E 01	2.390E-03
4.431E 01	5.049E 01	2.652E 01	-7.741E 02	-1.195E 03	-7.051E 02	-4.899E 02	1.636E 03	3.289E 02	5.056E-02	1.727E 02	2.655E-02
4.480E 01	5.117E 01	3.433E 01	-8.064E 02	-1.319E 03	-7.518E 02	-5.669E 02	1.696E 03	3.333E 02	5.124E-02	2.236E 02	3.438E-02
4.552E 01	4.344E 01	4.577E 01	-8.190E 02	-1.446E 03	-8.179E 02	-6.800E 02	1.783E 03	2.830E 02	4.350E-02	2.981E 02	4.583E-02
4.623E 01	3.573E 01	3.974E 01	-7.815E 02	-1.669E 03	-8.809E 02	-7.879E 02	1.871E 03	2.327E 02	3.577E-02	2.588E 02	3.979E-02
4.626E 01	3.543E 01	3.950E 01	-7.788E 02	-1.675E 03	-8.834E 02	-7.920E 02	1.874E 03	2.307E 02	3.547E-02	2.573E 02	3.955E-02
4.731E 01	2.410E 01	3.065E 01	-6.934E 02	-1.906E 03	-9.709E 02	-9.349E 02	2.004E 03	1.570E 02	2.413E-02	1.996E 02	3.069E-02
4.811E 01	1.785E 01	2.390E 01	-6.185E 02	-2.072E 03	-1.034E 03	-1.038E 03	2.103E 03	1.163E 02	1.787E-02	1.557E 02	2.393E-02
4.876E 01	1.845E 01	1.845E 01	-5.541E 02	-2.205E 03	-1.082E 03	-1.122E 03	2.184E 03	1.202E 02	1.847E-02	1.202E 02	1.847E-02
5.021E 01	1.340E 01	1.340E 01	-4.351E 02	-2.455E 03	-1.183E 03	-1.272E 03	2.365E 03	8.726E 01	1.341E-02	8.726E 01	1.341E-02
5.074E 01	1.155E 01	1.155E 01	-4.006E 02	-2.524E 03	-1.217E 03	-1.307E 03	2.431E 03	7.523E 01	1.156E-02	7.523E 01	1.156E-02
5.215E 01	9.575E 00	9.575E 00	-3.225E 02	-2.681E 03	-1.301E 03	-1.379E 03	2.609E 03	6.237E 01	9.587E-03	6.237E 01	9.587E-03
5.428E 01	6.200E 00	6.200E 00	-2.357E 02	-2.873E 03	-1.407E 03	-1.466E 03	2.875E 03	4.038E 01	6.208E-03	4.038E 01	6.208E-03
5.475E 01	6.033E 00	6.033E 00	-2.198E 02	-2.913E 03	-1.429E 03	-1.484E 03	2.939E 03	3.930E 01	6.041E-03	3.930E 01	6.041E-03
5.550E 01	5.197E 00	5.197E 00	-1.980E 02	-2.969E 03	-1.460E 03	-1.510E 03	3.035E 03	3.385E 01	5.204E-03	3.385E 01	5.204E-03
5.576E 01	4.904E 00	4.904E 00	-1.912E 02	-2.988E 03	-1.470E 03	-1.518E 03	3.068E 03	3.194E 01	4.910E-03	3.194E 01	4.910E-03
5.626E 01	2.562E 00	4.350E 00	-1.388E 02	-3.023E 03	-1.489E 03	-1.534E 03	3.102E 03	1.669E 01	2.566E-03	2.833E 01	4.355E-03
5.768E 01	3.936E 00	3.936E 00	-1.093E 02	-3.113E 03	-1.537E 03	-1.575E 03	3.209E 03	2.564E 01	3.941E-03	2.564E 01	3.941E-03
5.774E 01	4.450E 00	3.920E 00	-1.082E 02	-3.116E 03	-1.539E 03	-1.577E 03	3.217E 03	2.899E 01	4.456E-03	2.553E 01	3.925E-03
5.788E 01	4.450E 00	3.880E 00	-1.057E 02	-3.123E 03	-1.543E 03	-1.580E 03	3.234E 03	2.899E 01	4.456E-03	2.527E 01	3.884E-03
5.796E 01	3.856E 00	3.856E 00	-1.041E 02	-3.128E 03	-1.546E 03	-1.582E 03	3.245E 03	2.512E 01	3.861E-03	2.512E 01	3.861E-03
5.824E 01	3.775E 00	3.775E 00	-9.915E 01	-3.142E 03	-1.554E 03	-1.589E 03	3.280E 03	2.459E 01	3.780E-03	2.459E 01	3.780E-03
5.846E 01	3.246E 00	3.246E 00	-9.573E 01	-3.154E 03	-1.560E 03	-1.594E 03	3.309E 03	2.114E 01	3.250E-03	2.114E 01	3.250E-03
5.919E 01	1.550E 00	1.550E 00	-8.923E 01	-3.187E 03	-1.578E 03	-1.609E 03	3.402E 03	1.010E 01	1.552E-03	1.010E 01	1.552E-03
6.021E 01	2.075E 00	2.075E 00	-8.504E 01	-3.230E 03	-1.598E 03	-1.632E 03	3.532E 03	1.352E 01	2.078E-03	1.352E 01	2.078E-03
6.222E 01	4.688E 00	4.688E 00	-8.425E 01	-3.309E 03	-1.627E 03	-1.682E 03	3.790E 03	3.053E 01	4.693E-03	3.053E 01	4.693E-03
6.364E 01	4.712E 00	4.712E 00	-8.425E 01	-3.361E 03	-1.643E 03	-1.717E 03	3.972E 03	3.069E 01	4.718E-03	3.069E 01	4.718E-03
6.610E 01	6.042E 00	6.042E 00	-8.425E 01	-3.460E 03	-1.675E 03	-1.785E 03	4.289E 03	3.936E 01	6.050E-03	3.936E 01	6.050E-03
6.648E 01	6.130E 00	6.245E 00	-8.425E 01	-3.477E 03	-1.680E 03	-1.797E 03	4.337E 03	3.993E 01	6.138E-03	4.068E 01	6.253E-03

READING = 0088 BLOCK = 170 TIME = 271.501 MACH 7.2 PT = 998.749 TT = 3264.7

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CANALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.652E 01	6.130E 00	6.267E 00	-8.425E 01	-3.479E 03	-1.680E 03	-1.798E 03	4.342E 03	3.993E 01	6.138E-03	4.082E 01	6.275E-03
6.672E 01	5.992E 00	6.375E 00	-8.625E 01	-3.488E 03	-1.683E 03	-1.805E 03	4.366E 03	3.903E 01	5.999E-03	4.152E 01	6.383E-03
6.838E 01	4.845E 00	4.255E 00	-2.466E 01	-3.557E 03	-1.703E 03	-1.854E 03	4.549E 03	3.156E 01	4.851E-03	2.771E 01	4.260E-03
6.905E 01	3.803E 00	3.487E 00	5.832E 01	-3.580E 03	-1.710E 03	-1.871E 03	4.665E 03	2.477E 01	3.808E-03	2.272E 01	3.492E-03
6.982E 01	2.605E 00	2.186E 00	1.433E 02	-3.605E 03	-1.716E 03	-1.889E 03	4.760E 03	1.697E 01	2.608E-03	1.424E 01	2.189E-03
7.054E 01	2.080E 00	9.700E-01	1.961E 02	-3.627E 03	-1.722E 03	-1.906E 03	4.848E 03	1.355E 01	2.082E-03	6.318E 00	9.712E-04
7.115E 01	1.635E 00	9.735E-01	2.284E 02	-3.645E 03	-1.726E 03	-1.919E 03	4.922E 03	1.065E 01	1.637E-03	6.341E 00	9.747E-04
7.253E 01	9.200E-01	9.813E-01	2.819E 02	-3.677E 03	-1.733E 03	-1.944E 03	5.088E 03	5.992E 00	9.212E-04	6.392E 00	9.825E-04
7.406E 01	4.783E-01	9.900E-01	3.214E 02	-3.704E 03	-1.739E 03	-1.964E 03	5.273E 03	3.115E 00	4.789E-04	6.448E 00	9.912E-04
7.421E 01	4.350E-01	8.600E-01	3.243E 02	-3.706E 03	-1.740E 03	-1.966E 03	5.290E 03	2.833E 00	4.355E-04	5.602E 00	8.611E-04
7.496E 01	4.873E-01	2.100E-01	3.419E 02	-3.719E 03	-1.742E 03	-1.977E 03	5.374E 03	3.174E 00	4.879E-04	1.368E 00	2.103E-04
7.496E 01	4.876E-01	2.065E-01	3.419E 02	-3.719E 03	-1.742E 03	-1.977E 03	5.375E 03	3.176E 00	4.882E-04	1.345E 00	2.068E-04
7.629E 01	5.800E-01	0.000	3.532E 02	-3.744E 03	-1.745E 03	-1.999E 03	5.426E 03	3.778E 00	5.807E-04	0.000	0.000
7.914E 01	3.150E-01	0.000	3.711E 02	-3.748E 03	-1.750E 03	-1.998E 03	5.525E 03	2.052E 00	3.154E-04	0.000	0.000
8.304E 01	3.300E-01	0.000	3.849E 02	-3.614E 03	-1.753E 03	-1.862E 03	5.630E 03	2.149E 00	3.304E-04	0.000	0.000
8.585E 01	3.450E-01	0.000	3.924E 02	-3.615E 03	-1.754E 03	-1.862E 03	5.680E 03	2.247E 00	3.454E-04	0.000	0.000
8.871E 01	5.650E-01	0.000	4.034E 02	-3.617E 03	-1.755E 03	-1.862E 03	5.707E 03	3.680E 00	5.657E-04	0.000	0.000
8.871E 01	5.655E-01	0.000	4.034E 02	-3.617E 03	-1.755E 03	-1.862E 03	5.707E 03	3.683E 00	5.662E-04	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.492E 01	8.492E 01	2.275E-03	3.413E-02
4.041E 01	1.719E-01	8.510E 01	3.007E-03	3.761E-02
4.075E 01	5.812E 00	9.091E 01	2.505E-03	5.377E-02
4.124E 01	8.075E 00	9.898E 01	2.792E-03	3.824E-02
4.150E 01	4.407E 00	1.034E 02	2.594E-03	4.276E-02
4.246E 01	1.413E 01	1.175E 02	2.879E-03	5.613E-02
4.272E 01	3.746E 00	1.213E 02	3.449E-03	4.910E-02
4.273E 01	1.385E-01	1.214E 02	2.979E-03	5.699E-02
4.280E 01	8.503E-01	1.223E 02	2.990E-03	5.651E-02
4.431E 01	1.667E 01	1.389E 02	3.277E-03	5.461E-02
4.480E 01	4.028E 00	1.430E 02	3.360E-03	5.230E-02
4.552E 01	5.466E 00	1.484E 02	3.654E-03	4.618E-02
4.623E 01	5.683E 00	1.541E 02	3.325E-03	5.147E-02
4.626E 01	2.284E-01	1.543E 02	3.281E-03	5.219E-02
4.731E 01	9.069E 00	1.634E 02	3.092E-03	4.994E-02
4.811E 01	7.384E 00	1.708E 02	2.998E-03	4.441E-02
4.876E 01	5.898E 00	1.767E 02	2.968E-03	4.075E-02
5.021E 01	1.212E 01	1.888E 02	2.898E-03	3.283E-02
5.074E 01	4.170E 00	1.930E 02	2.977E-03	2.880E-02
5.215E 01	1.035E 01	2.033E 02	2.873E-03	2.524E-02
5.425E 01	1.359E 01	2.169E 02	2.862E-03	1.808E-02
5.475E 01	2.958E 00	2.199E 02	2.765E-03	1.802E-02
5.550E 01	4.211E 00	2.241E 02	2.761E-03	1.604E-02
5.576E 01	1.432E 00	2.255E 02	2.710E-03	1.553E-02
5.626E 01	1.247E 00	2.268E 02	2.575E-03	1.167E-02
5.768E 01	3.345E 00	2.301E 02	2.559E-03	1.263E-02
5.774E 01	2.155E-01	2.303E 02	2.794E-03	1.238E-02
5.788E 01	5.667E-01	2.309E 02	2.844E-03	1.216E-02
5.796E 01	3.565E-01	2.313E 02	3.252E-03	1.033E-02
5.824E 01	1.241E 00	2.325E 02	2.748E-03	1.161E-02
5.846E 01	9.243E-01	2.334E 02	2.719E-03	1.049E-02
5.919E 01	2.985E 00	2.364E 02	2.574E-03	6.307E-03
6.021E 01	3.632E 00	2.400E 02	1.931E-03	9.097E-03
6.222E 01	6.485E 00	2.465E 02	2.360E-03	1.484E-02
6.364E 01	5.480E 00	2.520E 02	2.897E-03	1.280E-02
6.610E 01	1.007E 01	2.621E 02	2.957E-03	1.471E-02
6.648E 01	1.437E 00	2.635E 02	3.211E-03	1.367E-02
6.652E 01	1.528E-01	2.637E 02	3.292E-03	1.349E-02
6.672E 01	7.730E-01	2.644E 02	3.290E-03	1.347E-02
6.838E 01	6.258E 00	2.707E 02	3.220E-03	1.126E-02
6.905E 01	2.193E 00	2.729E 02	3.177E-03	9.797E-03
6.982E 01	2.240E 00	2.751E 02	3.102E-03	7.406E-03
7.054E 01	1.692E 00	2.768E 02	3.024E-03	5.385E-03
7.115E 01	1.208E 00	2.780E 02	2.996E-03	4.805E-03
7.253E 01	2.376E 00	2.804E 02	2.940E-03	3.799E-03
7.406E 01	2.213E 00	2.826E 02	2.891E-03	3.123E-03
7.421E 01	1.834E-01	2.828E 02	2.870E-03	2.839E-03
7.496E 01	7.182E-01	2.835E 02	2.760E-03	1.762E-03
7.496E 01	1.105E-03	2.835E 02	2.759E-03	1.756E-03
7.629E 01	4.221E-01	2.839E 02	2.840E-03	2.600E-03
7.914E 01	7.744E-01	2.847E 02	2.722E-03	1.615E-03
8.304E 01	6.730E-01	2.854E 02	2.712E-03	1.662E-03
8.585E 01	3.587E-01	2.857E 02	2.706E-03	1.711E-03
8.871E 01	1.789E-01	2.859E 02	2.778E-03	2.492E-03
8.871E 01	0.000	2.859E 02	2.778E-03	2.493E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	116.	(LBF)
MEASURED THRUST	515.	(LBF)
CALCULATED SPECIFIC IMPULSE	442.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	1965.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.0807	
MEASURED THRUST COEFFICIENT	0.3583	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3171.	(LBF)
NET THRUST	292.	(LBF)
SPECIFIC IMPULSE	1114.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.2031	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.9	(LBF)
INLET MOMENTUM CHANGE	-406.9	(LBF)
COMBUSTOR FRICTION DRAG	178.6	(LBF)
COMBUSTOR STRUT DRAG	1.44	(LBF)
COMBUSTOR MOMENTUM CHANGE	60.	(LBF)
NOZZLE FRICTION DRAG	22.42	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	465.	(LBF)
NOZZLE PRESSURE INTEGRAL	488.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-719.	(LBF)
TOTAL STRUT DRAG	1.44	(LBF)
CAVITY FORCE	-670.	(LBF)
CALCULATED LOAD CELL FORCE	-1273.	(LBF)
MEASURED LOAD CELL FORCE	-874.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE 0.0,	0.0,	

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9573	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0998	
DELTA PT2	0.0882	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3156	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1011	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9023	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9122	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9291	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.6800	
ENTHALPY AT P0 - SUPERSONIC	-26.60	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	12.85	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0182
EQUIVALENCE RATIO	0.579
COMBUSTOR EFFICIENCY	0.612
TOTAL PRESSURE RATIO	0.0710
COMBUSTOR EFFECTIVENESS	0.5497
INJECTOR DISCHARGE COEFFICIENTS	0.9202, 0.6873,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9634
NOZZLE COEFFICIENT - CT	0.8982
PROCESS EFFICIENCY	0.8762
KINETIC ENERGY EFFICIENCY	0.9189

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7369	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.621	(IN)
NOZZLE SHROUD TRAILING EDGE	74.961	(IN)
NOZZLE PLUG TRAILING EDGE	88.713	(IN)
STRUT LEADING EDGE	57.877	(IN)
STRUT TRAILING EDGE	66.477	(IN)
COMBUSTOR EXIT	66.477	(IN)

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.722	B
1C	44.300	
2A	50.197	
2C	46.250	
3A	55.487	
3B	57.672	
4	46.222	

ORIGINAL PAGE IS OF POOR QUALITY

Reading 88

t = 278.70 sec.

Combustor pressure distributions indicate the injected fuel did not ignite,

2/12/75

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                                          RAMJET PERFORMANCE

                                      S U M M A R Y   R E P O R T

              P        T     H             GAMMA  MOLWT SONV  MACH  VEL   S       W/A      W    A/AC    MOMTM   G      IVAC  PHI  ETAC
WIND TUNNEL          1     0   6
 0.000    999.249 3266   751.8( 875) 1.2852 28.903 2687
 0.000      0.154  320   -52.3(  77) 1.3971 28.901  877 7.236 6343 1.834 0.05698 14.413 0.9876   2881  5.617 199.9
SPIKE TIP MS         2     0   6
 0.600     11.350 3266   751.8( 874) 1.2842 28.901 2686
 0.600     10.500 3210   734.5( 858) 1.2861 28.901 2665 0.349  931 2.142 0.05698 14.413 0.9876   3073  0.825 213.2
WIND TUNNEL          3     0   0
 0.000    999.249 3266   751.8( 875) 1.2852 28.903 2687
 0.000      0.171  330   -49.9(  79) 1.3974 28.901  891 7.112 6334 1.834 0.06155 15.569 0.9876   3108  6.058 199.6
SPIKE TIP NS         4     0   0
 0.600     11.350 3266   751.8( 874) 1.2842 28.901 2686
 0.600     10.341 3199   731.1( 854) 1.2864 28.901 2661 0.383 1018 2.142 0.06155 15.569 0.9876   3108  0.974 199.6
INLET THROAT         5     0   3
40.400    327.729 3158   718.5( 842) 1.2884 28.902 2646
40.400     10.256 1358   204.9( 334) 1.3567 28.901 1780 2.848 5069 1.900 0.71612 14.413 0.0786   2477 56.417 171.9
INLET UPNRBK         6     0   3
40.400    327.729 3158   718.5( 842) 1.2884 28.902 2646
40.400      8.854 1306   191.5( 321) 1.3599 28.901 1748 2.938 5135 1.900 0.65102 14.413 0.0864   2497 51.956 173.2
INLET DNNRBK         7     0   4
40.400    101.226 3158   718.5( 842) 1.2885 28.902 2646
40.400     88.346 3063   689.4( 814) 1.2913 28.902 2608 0.463 1807 1.981 0.65102 14.413 0.0864   2497 12.210 173.2
COMBUSTOR         0     8   1  21
40.410    284.925 3130   721.7( 859) 1.2899 28.011 2677
40.410     10.215 1390   210.5( 353) 1.3556 28.011 1829 2.766 5058 1.959 0.71781 14.449 0.0786   2477 56.422 171.4 0.08 0.07
COMBUSTOR         0     9   2   3
40.745    267.501 3145   719.5( 868) 1.2891 28.036 2681
40.745     11.815 1477   227.1( 377) 1.3504 28.036 1881 2.639 4963 1.965 0.72046 14.449 0.0783   2466 55.573 170.7 0.08 0.13
COMBUSTOR         0    10   3  21
41.235    247.978 3089   716.1( 847) 1.2916 27.984 2662
41.235      8.016 1331   201.8( 337) 1.3593 27.984 1793 2.830 5073 1.965 0.71474 14.449 0.0789   2440 56.348 168.9 0.08 0.02
COMBUSTOR         0    11   4  21
41.500    230.612 3076   714.3( 843) 1.2922 27.976 2658
41.500      8.426 1368   213.9( 347) 1.3572 27.976 1816 2.755 5004 1.969 0.70789 14.449 0.0797   2419 55.051 167.4 0.08 0.00
COMBUSTOR         0    12   5  21
42.460    156.040 3054   707.5( 837) 1.2929 27.975 2649
42.460      5.579 1348   208.9( 342) 1.3584 27.975 1804 2.768 4995 1.995 0.66709 14.449 0.0846   2364 51.782 163.6 0.08 0.00
COMBUSTOR         0    13   6  21
42.730    151.482 3048   705.6( 835) 1.2931 27.975 2647
42.730      5.803 1370   214.8( 348) 1.3571 27.974 1818 2.726 4956 1.996 0.65840 14.449 0.0857   2353 50.710 162.9 0.08 0.00
COMBUSTOR         0    14   7  21
42.795    129.826 3143   705.2( 862) 1.2884 28.085 2677
42.795      5.857 1495   216.2( 378) 1.3495 28.085 1884 2.626 4947 2.014 0.65679 14.449 0.0859   2350 50.493 162.7 0.08 0.23
COMBUSTOR         0    15   8  21
44.310    135.369 3031   695.9( 829) 1.2933 27.991 2639
44.310      8.705 1558   261.7( 399) 1.3464 27.991 1930 2.414 4661 2.002 0.60736 14.449 0.0929   2300 43.993 159.2 0.08 0.03
COMBUSTOR         0    16   9  21
44.800    133.054 3010   693.0( 823) 1.2942 27.977 2631
44.800      9.626 1593   275.1( 409) 1.3447 27.977 1951 2.344 4573 2.001 0.59983 14.449 0.0940   2286 42.629 158.2 0.08 0.01
COMBUSTOR         0    17  10  21
45.515    127.463 2995   689.0( 819) 1.2947 27.975 2625
45.515     10.729 1647   290.6( 424) 1.3421 27.975 1982 2.253 4465 2.003 0.59537 14.449 0.0948   2266 41.312 156.8 0.08 0.00
COMBUSTOR         0    18  11  21
46.220    111.371 2959   688.1( 831) 1.2965 27.152 2651
46.220     10.852 1650   300.7( 447) 1.3412 27.152 2034 2.165 4403 2.059 0.58020 14.480 0.0975   2253 39.701 155.6 0.16 0.04
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	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	M	A/AC	MOMTP	C	IVAC	PHT	ETAC
COMBUSTOR	0	19	12 21														
46.230	114.308	2933	688.1(824)	1.2978	27.123	2642											
46.230	10.853	1656	300.8(440)	1.3428	27.123	2019	2.180	4402	2.054	0.58018	14.460	0.0975	2253	39.693	155.5	0.16	0.01
COMBUSTOR	0	20	13 21														
46.250	77.456	2839	700.5(897)	1.3039	23.912	2774											
46.250	10.857	1757	331.0(530)	1.3421	23.912	2214	1.942	4300	2.291	0.58575	14.649	0.0976	2229	39.142	152.2	0.53	0.05
COMBUSTOR	0	21	14 21														
46.260	85.216	2732	700.4(861)	1.3088	23.812	2732											
46.260	10.859	1641	331.1(494)	1.3483	23.812	2149	2.000	4299	2.272	0.58534	14.649	0.0977	2229	39.106	152.2	0.53	0.01
COMBUSTOR	0	22	15 21														
47.310	80.860	2697	693.8(849)	1.3102	23.797	2717											
47.310	11.042	1647	338.6(496)	1.3482	23.797	2154	1.957	4216	2.272	0.54269	14.649	0.1054	2218	35.595	151.4	0.53	0.00
COMBUSTOR	0	23	16 21														
48.110	75.868	2680	688.5(843)	1.3108	23.795	2709											
48.110	10.023	1621	331.1(487)	1.3494	23.794	2138	1.978	4229	2.275	0.49871	14.649	0.1147	2220	32.773	151.5	0.53	0.00
COMBUSTOR	0	24	17 21														
48.755	70.546	2667	684.3(839)	1.3112	23.794	2703											
48.755	7.825	1541	305.6(462)	1.3533	23.794	2088	2.085	4353	2.279	0.45286	14.649	0.1263	2235	30.635	152.6	0.53	0.00
COMBUSTOR	0	25	18 21														
50.195	50.162	2602	688.8(898)	1.3155	21.560	2809											
50.195	7.552	1620	326.0(536)	1.3520	21.560	2247	1.896	4261	2.487	0.37222	14.797	0.1552	2260	24.646	152.7	0.86	0.03
COMBUSTOR	0	26	19 21														
50.205	54.467	2514	688.7(866)	1.3195	21.487	2770											
50.205	7.550	1525	326.0(504)	1.3575	21.487	2188	1.947	4260	2.468	0.37174	14.797	0.1554	2260	24.613	152.7	0.86	0.00
COMBUSTOR	0	27	20 21														
50.735	54.644	2495	686.8(859)	1.3203	21.476	2762											
50.735	7.450	1506	324.3(498)	1.3583	21.476	2176	1.957	4259	2.465	0.34767	14.797	0.1662	2276	23.011	153.8	0.86	0.00
COMBUSTOR	0	28	21 3														
52.145	53.165	2501	682.4(861)	1.3199	21.490	2763											
52.145	7.812	1540	329.9(509)	1.3569	21.490	2198	1.910	4200	2.468	0.29631	14.797	0.1950	2322	19.340	156.9	0.86	0.01
COMBUSTOR	0	29	22 21														
54.245	44.799	2464	675.1(850)	1.3214	21.407	2750											
54.245	3.000	1228	226.9(403)	1.3723	21.407	1978	2.394	4736	2.485	0.24363	14.844	0.2379	2368	17.931	159.5	0.86	0.00
COMBUSTOR	0	30	23 21														
54.745	46.645	2455	674.0(847)	1.3218	21.402	2745											
54.745	3.392	1250	236.9(411)	1.3712	21.402	1996	2.343	4677	2.480	0.23368	14.844	0.2480	2373	16.983	159.9	0.86	0.00
COMBUSTOR	0	31	24 21														
55.495	45.413	2450	672.4(845)	1.3220	21.402	2743											
55.495	3.123	1229	229.9(403)	1.3723	21.401	1979	2.378	4706	2.482	0.22028	14.844	0.2631	2382	16.109	160.4	0.86	0.00
COMBUSTOR	0	32	25 21														
55.760	44.955	2448	671.9(844)	1.3220	21.401	2742											
55.760	3.028	1221	227.3(400)	1.3727	21.401	1973	2.391	4717	2.483	0.21593	14.844	0.2684	2384	15.828	160.6	0.86	0.00
COMBUSTOR	0	33	26 21														
56.255	33.313	2554	670.9(883)	1.3171	21.490	2790											
56.255	2.253	1284	208.0(421)	1.3685	21.490	2016	2.387	4813	2.525	0.17041	14.844	0.3401	2417	12.746	162.8	0.86	0.03
COMBUSTOR	0	34	27 3														
57.680	34.689	2580	668.5(892)	1.3158	21.517	2801											
57.680	3.642	1461	257.1(482)	1.3593	21.517	2142	2.118	4537	2.524	0.15751	14.844	0.3679	2437	11.106	164.1	0.86	0.04
COMBUSTOR	0	35	28 21														
57.735	40.435	2460	668.4(848)	1.3213	21.418	2747											
57.735	2.886	1247	228.5(409)	1.3712	21.418	1993	2.355	4692	2.494	0.15709	14.844	0.3689	2437	11.454	164.2	0.86	0.01
COMBUSTOR	0	36	29 21														
57.875	41.592	2442	668.2(842)	1.3222	21.404	2738											
57.875	2.925	1232	229.8(404)	1.3721	21.404	1981	2.364	4684	2.489	0.15996	14.844	0.3716	2439	11.352	164.3	0.86	0.00
COMBUSTOR	0	37	30 3														
57.955	33.597	2620	668.1(906)	1.3140	21.551	2818											
57.955	3.794	1515	260.7(509)	1.3562	21.551	2177	2.074	4515	2.531	0.15768	14.844	0.3675	2440	11.064	164.4	0.86	0.05

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	F	IVAC	PHI	ETAC
COMBUSTOR 0 38 31 3																	
58.235	42.350	2663	667.7(922)	1.3119	21.588	2837											
58.235	3.950	1576	265.1(521)	1.3528	21.588	2216	2.026	4488	2.500	0.15716	14.844	0.3688	2444	10.962	164.6	0.86	0.06
COMBUSTOR 0 39 32 4																	
58.461	37.032	2547	667.3(880)	1.3173	21.492	2786											
58.461	3.403	1389	243.7(457)	1.3632	21.492	2093	2.200	4604	2.514	0.15686	14.844	0.3695	2446	11.224	164.8	0.86	0.03
COMBUSTOR 0 40 33 21																	
59.185	38.325	2450	666.3(845)	1.3217	21.415	2742											
59.185	1.650	1081	173.8(353)	1.3795	21.415	1861	2.667	4964	2.498	0.15443	14.844	0.3753	2449	11.914	165.0	0.86	0.00
COMBUSTOR 0 41 34 21																	
60.205	41.473	2432	665.0(838)	1.3225	21.403	2734											
60.205	2.050	1114	190.0(364)	1.3780	21.403	1888	2.582	4875	2.488	0.15345	14.844	0.3777	2448	11.626	164.9	0.86	0.00
COMBUSTOR 0 42 35 21																	
62.215	42.410	2425	663.1(836)	1.3228	21.402	2730											
62.215	2.337	1144	200.9(374)	1.3766	21.402	1913	2.514	4809	2.484	0.15879	14.844	0.3650	2437	11.867	164.2	0.86	0.00
COMBUSTOR 0 43 36 21																	
63.635	40.002	2421	661.6(834)	1.3229	21.401	2728											
63.635	1.837	1085	181.3(354)	1.3794	21.401	1865	2.629	4903	2.489	0.16309	14.844	0.3553	2429	12.427	163.7	0.86	0.00
COMBUSTOR 0 44 37 3																	
66.099	36.768	2468	658.7(851)	1.3206	21.446	2749											
66.099	3.236	1325	242.6(436)	1.3669	21.446	2049	2.226	4563	2.504	0.15459	14.844	0.3749	2416	10.962	162.7	0.86	0.01
COMBUSTOR 0 45 38 4																	
66.475	28.979	2605	658.2(901)	1.3143	21.560	2810											
66.475	3.589	1543	266.3(510)	1.3547	21.560	2196	2.017	4428	2.542	0.14372	14.844	0.4032	2414	9.891	162.6	0.86	0.05
COMBUSTOR REGEN 46 39 3																	
66.475	28.979	2715	700.9(943)	1.3106	21.560	2865											
66.475	3.746	1633	298.0(542)	1.3505	21.560	2255	1.991	4490	2.558	0.14372	14.844	0.4032	2458	10.029	165.6	0.86	0.05
NOZZLE AE 47 40 4																	
88.711	28.979	2605	658.2(900)	1.3143	21.560	2810											
88.711	0.292	778	6.9(251)	1.3916	21.560	1580	3.613	5709	2.542	0.02992	14.844	1.9371	2779	2.654	187.2	0.86	0.05
NOZZLE PO 48 41 4																	
88.711	28.979	2605	658.2(900)	1.3143	21.560	2810											
88.711	0.154	649	-35.2(209)	1.3960	21.560	1445	4.076	5891	2.542	0.01946	14.844	2.9779	2835	1.782	191.0	0.86	0.05
NOZZLE AE REGEN 49 42 4																	
88.711	28.979	2715	700.9(943)	1.3106	21.560	2865											
88.711	0.304	826	22.8(267)	1.3897	21.560	1627	3.580	5825	2.558	0.02992	14.844	1.9372	2838	2.708	191.2	0.86	0.05
NOZZLE PO REGEN 50 43 4																	
88.711	28.979	2715	700.9(943)	1.3106	21.560	2865											
88.711	0.154	681	-24.6(219)	1.3950	21.560	1481	4.069	6025	2.558	0.01895	14.844	3.0586	2900	1.774	195.4	0.86	0.05
FICTIVE COMBUSTR 69 62 0																	
66.475	327.729	5404	658.2(1962)	1.1678	24.365	3588											
66.475	0.154	1146	-1173.5(340)	1.3449	24.873	1755	5.456	9574	2.486	0.02066	14.844	2.8056	4527	3.073	305.0	0.86	1.00
FICTIVE NOZZLE 70 63 0																	
88.711	22.279	2576	646.8(889)	1.3153	21.560	2795											
88.711	0.331	856	32.5(276)	1.3885	21.560	1655	3.349	5544	2.562	0.02992	14.844	1.9371	2722	2.578	183.4	0.86	0.05

XABS	P-IP	P-OH	PDA	PDX	Q-IP	Q-CB	CAAALI	P-IP/PSO	P-IP/PTO	P-OH/PSO	P-CP/PTO
6.941E-01	6.900E-01	0.000	-2.742E-01	0.000	0.000	0.000	2.070E-02	4.492E 00	6.905E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.492E 00	6.905E-04	0.000	0.000
3.070E 01	1.020E 00	0.000	-9.228E 01	0.000	0.000	0.000	5.953E 02	6.641E 00	1.021E-03	0.000	0.000
3.508E 01	1.885E 00	0.000	-1.864E 02	0.000	0.000	0.000	6.804E 02	1.227E 01	1.886E-03	0.000	0.000
3.555E 01	2.115E 00	0.000	-2.046E 02	0.000	0.000	0.000	7.013E 02	1.377E 01	2.117E-03	0.000	0.000
3.606E 01	2.065E 00	0.000	-2.259E 02	-2.239E 02	-2.239E 02	0.000	7.246E 02	1.344E 01	2.067E-03	0.000	0.000
3.648E 01	2.271E 00	0.000	-2.444E 02	-2.293E 02	-2.293E 02	0.000	7.443E 02	1.478E 01	2.272E-03	0.000	0.000
3.661E 01	2.302E 00	3.261E 00	-2.844E 02	-2.311E 02	-2.311E 02	0.000	7.506E 02	1.499E 01	2.304E-03	2.123E 01	3.264E-03
3.662E 01	2.303E 00	3.277E 00	-2.844E 02	-2.312E 02	-2.312E 02	0.000	7.508E 02	1.500E 01	2.305E-03	2.133E 01	3.279E-03
3.701E 01	2.395E 00	4.274E 00	-2.865E 02	-2.365E 02	-2.365E 02	0.000	7.914E 02	1.559E 01	2.397E-03	2.783E 01	4.277E-03
3.728E 01	2.291E 00	4.975E 00	-2.863E 02	-2.404E 02	-2.404E 02	0.000	8.203E 02	1.492E 01	2.293E-03	3.239E 01	4.979E-03
3.803E 01	2.010E 00	8.308E 00	-2.700E 02	-2.514E 02	-2.514E 02	0.000	9.005E 02	1.309E 01	2.012E-03	5.409E 01	8.314E-03
3.874E 01	6.701E 00	1.151E 01	-2.682E 02	-3.319E 02	-2.643E 02	-6.768E 01	9.801E 02	4.363E 01	6.706E-03	7.491E 01	1.151E-02
3.875E 01	6.734E 00	1.149E 01	-2.682E 02	-3.324E 02	-2.644E 02	-6.800E 01	9.807E 02	4.384E 01	6.739E-03	7.480E 01	1.150E-02
3.901E 01	8.440E 00	1.063E 01	-2.730E 02	-3.542E 02	-2.700E 02	-8.426E 01	1.010E 03	5.495E 01	8.446E-03	6.921E 01	1.064E-02
3.950E 01	1.160E 01	9.012E 00	-2.912E 02	-3.968E 02	-2.820E 02	-1.148E 02	1.066E 03	7.554E 01	1.161E-02	5.868E 01	9.019E-03
3.976E 01	1.107E 01	8.137E 00	-3.013E 02	-4.207E 02	-2.895E 02	-1.313E 02	1.097E 03	7.208E 01	1.108E-02	5.298E 01	8.144E-03
4.000E 01	1.060E 01	7.819E 00	-3.077E 02	-4.425E 02	-2.966E 02	-1.458E 02	1.124E 03	6.901E 01	1.061E-02	5.090E 01	7.824E-03
4.023E 01	1.126E 01	7.500E 00	-3.143E 02	-4.646E 02	-3.042E 02	-1.604E 02	1.151E 03	7.330E 01	1.127E-02	4.883E 01	7.506E-03
4.040E 01	1.172E 01	8.615E 00	-3.187E 02	-4.804E 02	-3.098E 02	-1.706E 02	1.171E 03	7.631E 01	1.173E-02	5.609E 01	8.621E-03
4.041E 01	1.175E 01	8.682E 00	-3.188E 02	-4.813E 02	-3.101E 02	-1.712E 02	1.172E 03	7.649E 01	1.176E-02	5.653E 01	8.689E-03
4.074E 01	1.269E 01	1.094E 01	-3.245E 02	-5.137E 02	-3.219E 02	-1.918E 02	1.211E 03	8.259E 01	1.270E-02	7.125E 01	1.095E-02
4.123E 01	1.406E 01	1.975E 00	-3.424E 02	-5.620E 02	-3.405E 02	-2.216E 02	1.269E 03	9.153E 01	1.407E-02	1.286E 01	1.976E-03
4.150E 01	1.480E 01	2.053E 00	-3.592E 02	-5.886E 02	-3.513E 02	-2.373E 02	1.300E 03	9.636E 01	1.481E-02	1.336E 01	2.054E-03
4.246E 01	8.825E 00	2.333E 00	-3.993E 02	-6.866E 02	-3.931E 02	-2.935E 02	1.414E 03	5.746E 01	8.832E-03	1.519E 01	2.335E-03
4.273E 01	9.194E 00	2.412E 00	-4.060E 02	-7.135E 02	-4.051E 02	-3.084E 02	1.446E 03	5.986E 01	9.201E-03	1.571E 01	2.414E-03
4.279E 01	9.283E 00	2.431E 00	-4.076E 02	-7.197E 02	-4.080E 02	-3.117E 02	1.454E 03	6.044E 01	9.290E-03	1.583E 01	2.433E-03
4.431E 01	1.135E 01	6.055E 00	-4.350E 02	-8.548E 02	-4.711E 02	-3.837E 02	1.637E 03	7.393E 01	1.136E-02	3.942E 01	6.060E-03
4.480E 01	1.202E 01	7.227E 00	-4.427E 02	-8.956E 02	-4.899E 02	-4.057E 02	1.696E 03	7.829E 01	1.203E-02	4.706E 01	7.233E-03
4.551E 01	1.252E 01	8.937E 00	-4.529E 02	-9.543E 02	-5.163E 02	-4.379E 02	1.783E 03	8.151E 01	1.253E-02	5.819E 01	8.944E-03
4.622E 01	1.301E 01	8.695E 00	-4.555E 02	-1.014E 03	-5.415E 02	-4.729E 02	1.870E 03	8.469E 01	1.302E-02	5.661E 01	8.702E-03
4.623E 01	1.301E 01	8.692E 00	-4.556E 02	-1.015E 03	-5.418E 02	-4.734E 02	1.871E 03	8.474E 01	1.302E-02	5.659E 01	8.699E-03
4.625E 01	1.303E 01	8.685E 00	-4.555E 02	-1.017E 03	-5.425E 02	-4.745E 02	1.873E 03	8.483E 01	1.304E-02	5.655E 01	8.692E-03
4.626E 01	1.304E 01	8.682E 00	-4.550E 02	-1.018E 03	-5.429E 02	-4.750E 02	1.875E 03	8.487E 01	1.305E-02	5.652E 01	8.688E-03
4.731E 01	1.376E 01	8.321E 00	-4.529E 02	-1.116E 03	-5.788E 02	-5.372E 02	2.004E 03	8.960E 01	1.377E-02	5.418E 01	8.327E-03
4.811E 01	1.200E 01	8.046E 00	-4.411E 02	-1.193E 03	-6.049E 02	-5.838E 02	2.103E 03	7.813E 01	1.201E-02	5.239E 01	8.052E-03
4.875E 01	7.825E 00	7.825E 00	-4.186E 02	-1.255E 03	-6.251E 02	-6.297E 02	2.163E 03	5.095E 01	7.831E-03	5.095E 01	7.831E-03
5.019E 01	7.552E 00	7.552E 00	-3.615E 02	-1.367E 03	-6.678E 02	-6.994E 02	2.363E 03	4.917E 01	7.558E-03	4.917E 01	7.558E-03
5.020E 01	7.550E 00	7.550E 00	-3.611E 02	-1.368E 03	-6.681E 02	-6.997E 02	2.365E 03	4.916E 01	7.556E-03	4.916E 01	7.556E-03
5.073E 01	7.450E 00	7.450E 00	-3.404E 02	-1.397E 03	-6.830E 02	-7.138E 02	2.431E 03	4.850E 01	7.456E-03	4.850E 01	7.456E-03
5.214E 01	7.812E 00	7.812E 00	-2.839E 02	-1.461E 03	-7.202E 02	-7.408E 02	2.609E 03	5.086E 01	7.818E-03	5.086E 01	7.818E-03
5.424E 01	3.000E 00	3.000E 00	-2.244E 02	-1.541E 03	-7.697E 02	-7.718E 02	2.879E 03	1.953E 01	3.002E-03	1.953E 01	3.002E-03
5.474E 01	3.392E 00	3.392E 00	-2.161E 02	-1.558E 03	-7.804E 02	-7.776E 02	2.939E 03	2.208E 01	3.394E-03	2.208E 01	3.394E-03
5.549E 01	3.123E 00	3.123E 00	-2.035E 02	-1.582E 03	-7.958E 02	-7.858E 02	3.035E 03	2.033E 01	3.125E-03	2.033E 01	3.125E-03
5.576E 01	3.028E 00	3.028E 00	-1.993E 02	-1.590E 03	-8.010E 02	-7.886E 02	3.068E 03	1.971E 01	3.030E-03	1.971E 01	3.030E-03
5.625E 01	1.656E 00	2.850E 00	-1.656E 02	-1.604E 03	-8.099E 02	-7.937E 02	3.102E 03	1.078E 01	1.657E-03	1.856E 01	2.852E-03
5.768E 01	3.642E 00	3.642E 00	-1.425E 02	-1.639E 03	-8.321E 02	-8.073E 02	3.209E 03	2.371E 01	3.644E-03	2.371E 01	3.644E-03
5.773E 01	2.100E 00	3.672E 00	-1.415E 02	-1.641E 03	-8.329E 02	-8.078E 02	3.217E 03	1.367E 01	2.102E-03	2.391E 01	3.675E-03
5.787E 01	2.100E 00	3.750E 00	-1.391E 02	-1.644E 03	-8.349E 02	-8.091E 02	3.234E 03	1.367E 01	2.102E-03	2.442E 01	3.753E-03
5.795E 01	3.794E 00	3.794E 00	-1.376E 02	-1.646E 03	-8.360E 02	-8.098E 02	3.245E 03	2.470E 01	3.797E-03	2.470E 01	3.797E-03
5.823E 01	3.950E 00	3.950E 00	-1.325E 02	-1.652E 03	-8.398E 02	-8.124E 02	3.280E 03	2.572E 01	3.953E-03	2.572E 01	3.953E-03
5.846E 01	3.403E 00	3.403E 00	-1.289E 02	-1.657E 03	-8.427E 02	-8.145E 02	3.309E 03	2.215E 01	3.405E-03	2.215E 01	3.405E-03
5.918E 01	1.650E 00	1.650E 00	-1.221E 02	-1.673E 03	-8.516E 02	-8.213E 02	3.402E 03	1.074E 01	1.651E-03	1.074E 01	1.651E-03
6.020E 01	2.050E 00	2.050E 00	-1.178E 02	-1.692E 03	-8.625E 02	-8.291E 02	3.532E 03	1.335E 01	2.052E-03	1.335E 01	2.052E-03
6.221E 01	2.337E 00	2.337E 00	-1.173E 02	-1.720E 03	-8.796E 02	-8.408E 02	3.790E 03	1.522E 01	2.339E-03	1.522E 01	2.339E-03
6.363E 01	1.837E 00	1.837E 00	-1.173E 02	-1.742E 03	-8.901E 02	-8.514E 02	3.972E 03	1.196E 01	1.839E-03	1.196E 01	1.839E-03

READING = 0088 BLOCK = 178 TIME = 278.701 MACH 7.2 PT = 999.249 TT = 3266.3

XA88	P-IP	P-OB	PDA	GOX	Q-IR	Q-OB	CA*ALL	P-TB/PSO	P-IR/PTO	P-UB/PSO	P-OR/PTO
6.610E 01	3.236E 00	3.236E 00	-1.173E 02	-1.765E 03	-9.094E 02	-8.760E 02	4.289E 03	2.107E 01	3.238E-03	2.107E 01	3.238E-03
6.647E 01	3.730E 00	3.449E 00	-1.173E 02	-1.792E 03	-9.125E 02	-8.800E 02	4.337E 03	2.428E 01	3.733E-03	2.245E 01	3.451E-03
6.651E 01	3.730E 00	3.472E 00	-1.173E 02	-1.793E 03	-9.128E 02	-8.804E 02	4.342E 03	2.428E 01	3.733E-03	2.260E 01	3.474E-03
6.671E 01	3.640E 00	3.585E 00	-1.173E 02	-1.797E 03	-9.144E 02	-8.826E 02	4.368E 03	2.370E 01	3.643E-03	2.334E 01	3.588E-03
6.837E 01	2.895E 00	1.700E 00	-8.519E 01	-1.825E 03	-9.261E 02	-8.992E 02	4.584E 03	1.885E 01	2.897E-03	1.107E 01	1.701E-03
6.904E 01	2.146E 00	1.455E 00	-4.362E 01	-1.836E 03	-9.300E 02	-9.055E 02	4.665E 03	1.397E 01	2.147E-03	9.473E 00	1.456E-03
6.981E 01	1.285E 00	1.204E 00	-3.635E-01	-1.848E 03	-9.342E 02	-9.139E 02	4.760E 03	8.366E 00	1.286E-03	7.841E 00	1.205E-03
7.053E 01	1.207E 00	9.700E-01	3.051E 01	-1.862E 03	-9.379E 02	-9.236E 02	4.848E 03	7.855E 00	1.207E-03	6.315E 00	9.707E-04
7.114E 01	1.140E 00	9.535E-01	5.422E 01	-1.872E 03	-9.412E 02	-9.311E 02	4.922E 03	7.422E 00	1.141E-03	6.208E 00	9.543E-04
7.252E 01	8.100E-01	9.163E-01	9.878E 01	-1.888E 03	-9.488E 02	-9.390E 02	5.088E 03	5.274E 00	8.106E-04	5.966E 00	9.170E-04
7.405E 01	4.776E-01	8.750E-01	1.349E 02	-1.903E 03	-9.563E 02	-9.467E 02	5.273E 03	3.109E 00	4.779E-04	5.697E 00	8.757E-04
7.420E 01	4.450E-01	7.633E-01	1.376E 02	-1.905E 03	-9.569E 02	-9.480E 02	5.290E 03	2.897E 00	4.453E-04	4.970E 00	7.639E-04
7.495E 01	4.991E-01	2.050E-01	1.539E 02	-1.915E 03	-9.598E 02	-9.556E 02	5.374E 03	3.249E 00	4.995E-04	1.335E 00	2.052E-04
7.496E 01	4.994E-01	2.020E-01	1.543E 02	-1.915E 03	-9.598E 02	-9.557E 02	5.375E 03	3.251E 00	4.998E-04	1.315E 00	2.022E-04
7.628E 01	5.950E-01	0.000	1.659E 02	-1.936E 03	-9.642E 02	-9.718E 02	5.426E 03	3.874E 00	5.954E-04	0.000	0.000
7.913E 01	2.650E-01	0.000	1.831E 02	-1.943E 03	-9.711E 02	-9.718E 02	5.525E 03	1.725E 00	2.652E-04	0.000	0.000
8.303E 01	2.750E-01	0.000	1.946E 02	-1.949E 03	-9.769E 02	-9.718E 02	5.630E 03	1.790E 00	2.752E-04	0.000	0.000
8.584E 01	3.100E-01	0.000	2.011E 02	-1.953E 03	-9.815E 02	-9.718E 02	5.684E 03	2.018E 00	3.102E-04	0.000	0.000
8.870E 01	4.250E-01	0.000	2.100E 02	-1.962E 03	-9.900E 02	-9.718E 02	5.707E 03	2.767E 00	4.253E-04	0.000	0.000
8.871E 01	4.252E-01	0.000	2.100E 02	-1.962E 03	-9.900E 02	-9.718E 02	5.707E 03	2.769E 00	4.256E-04	0.000	0.000

READING = 0086 BLOCK = 178 TIME = 278.701 MACH 7.2 PT = 999.249 TT = 3266.3

X	ODRAG	CDRAG	CF	HC
4.040E 01	9.500E 01	8.500E 01	2.278E-03	3.392E-02
4.041E 01	1.590E-01	8.516E 01	2.532E-03	3.309E-02
4.074E 01	5.394E 00	9.055E 01	2.382E-03	3.815E-02
4.123E 01	7.763E 00	9.832E 01	2.433E-03	2.822E-02
4.150E 01	4.235E 00	1.026E 02	2.426E-03	2.930E-02
4.246E 01	1.519E 01	1.177E 02	2.557E-03	2.061E-02
4.273E 01	4.226E 00	1.220E 02	2.571E-03	2.131E-02
4.279E 01	1.014E 00	1.230E 02	2.570E-03	2.143E-02
4.431E 01	2.288E 01	1.459E 02	2.729E-03	2.724E-02
4.480E 01	6.960E 00	1.528E 02	2.674E-03	2.958E-02
4.551E 01	9.837E 00	1.627E 02	2.698E-03	3.177E-02
4.622E 01	9.798E 00	1.725E 02	2.904E-03	3.085E-02
4.623E 01	1.389E-01	1.726E 02	2.760E-03	3.207E-02
4.625E 01	2.992E-01	1.729E 02	3.463E-03	2.896E-02
4.626E 01	1.558E-01	1.730E 02	2.968E-03	3.335E-02
4.731E 01	1.413E 01	1.872E 02	2.878E-03	3.371E-02
4.811E 01	9.698E 00	1.969E 02	2.849E-03	3.102E-02
4.875E 01	7.200E 00	2.041E 02	2.811E-03	2.573E-02
5.019E 01	1.535E 01	2.194E 02	3.363E-03	2.157E-02
5.020E 01	1.036E-01	2.195E 02	3.363E-03	2.157E-02
5.073E 01	4.893E 00	2.244E 02	2.819E-03	2.496E-02
5.214E 01	1.047E 01	2.349E 02	2.751E-03	2.467E-02
5.424E 01	1.351E 01	2.484E 02	2.693E-03	1.230E-02
5.474E 01	2.957E 00	2.514E 02	2.622E-03	1.351E-02
5.549E 01	4.136E 00	2.555E 02	2.595E-03	1.263E-02
5.576E 01	1.404E 00	2.569E 02	2.587E-03	1.231E-02
5.625E 01	1.216E 00	2.581E 02	2.513E-03	9.476E-03
5.768E 01	3.303E 00	2.614E 02	2.632E-03	1.258E-02
5.773E 01	2.094E-01	2.616E 02	2.638E-03	1.067E-02
5.787E 01	5.214E-01	2.621E 02	2.507E-03	1.115E-02
5.795E 01	2.993E-01	2.624E 02	2.712E-03	1.260E-02
5.823E 01	1.061E 00	2.635E 02	2.690E-03	1.299E-02
5.846E 01	8.628E-01	2.644E 02	2.705E-03	1.164E-02
5.918E 01	2.823E 00	2.672E 02	2.565E-03	7.201E-03
6.020E 01	3.844E 00	2.710E 02	2.432E-03	8.665E-03
6.221E 01	7.347E 00	2.784E 02	2.419E-03	9.552E-03
6.363E 01	5.348E 00	2.837E 02	2.414E-03	8.047E-03
6.610E 01	9.063E 00	2.928E 02	2.489E-03	1.178E-02
6.647E 01	1.282E 00	2.941E 02	2.608E-03	1.222E-02
6.651E 01	1.356E-01	2.942E 02	2.730E-03	1.174E-02
6.671E 01	6.939E-01	2.949E 02	2.729E-03	1.176E-02
6.837E 01	5.246E 00	3.001E 02	2.633E-03	8.628E-03
6.904E 01	1.656E 00	3.018E 02	2.585E-03	7.267E-03
6.981E 01	1.619E 00	3.034E 02	2.513E-03	5.583E-03
7.053E 01	1.289E 00	3.047E 02	2.483E-03	5.059E-03
7.114E 01	1.028E 00	3.057E 02	2.475E-03	4.916E-03
7.252E 01	2.152E 00	3.079E 02	2.437E-03	4.266E-03
7.405E 01	2.076E 00	3.100E 02	2.387E-03	3.561E-03
7.420E 01	1.728E-01	3.101E 02	2.367E-03	3.279E-03
7.495E 01	6.917E-01	3.108E 02	2.275E-03	2.207E-03
7.496E 01	1.093E-03	3.108E 02	2.274E-03	2.200E-03
7.628E 01	4.208E-01	3.113E 02	2.359E-03	3.229E-03
7.913E 01	7.341E-01	3.120E 02	2.212E-03	1.776E-03
8.303E 01	5.860E-01	3.126E 02	2.203E-03	1.810E-03
8.584E 01	3.197E-01	3.129E 02	2.211E-03	1.966E-03
8.870E 01	1.537E-01	3.130E 02	2.251E-03	2.465E-03

READING = 0088 BLOCK = 178 TIME = 278.701 MACH 7.2 PT = 999.249 TT = 3266.5

X	DDRAG	CDRAG	CF	HC
8.871E 01	0.000	3.130E 02	2.251E-03	2.467E-03

ORIGINAL PAGE IS
OF POOR QUALITY

READING = 0098 BLOCK = 178 TIME = 278.701 MACH 7.2 PT = 999.249 TT = 3266.5

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	=159.	(LBF)
MEASURED THRUST	=134.	(LBF)
CALCULATED SPECIFIC IMPULSE	=407.	(LBF=SEC/LBM)
MEASURED SPECIFIC IMPULSE	=344.	(LBF=SEC/LBM)
CALCULATED THRUST COEFFICIENT	=.1104	
MEASURED THRUST COEFFICIENT	=.0932	

REGENERATIVE=COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	2781.	(LBF)
NET THRUST	=100.	(LBF)
SPECIFIC IMPULSE	=257.	(LBF=SEC/LBM)
THRUST COEFFICIENT	=.0698	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.0	(LBF)
INLET MOMENTUM CHANGE	=403.7	(LBF)
COMBUSTOR FRICTION DRAG	209.1	(LBF)
COMBUSTOR STRUT DRAG	15.30	(LBF)
COMBUSTOR MOMENTUM CHANGE	=63.	(LBF)
NOZZLE FRICTION DRAG	18.98	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	308.	(LBF)
NOZZLE PRESSURE INTEGRAL	327.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	=719.	(LBF)
TOTAL STRUT DRAG	15.30	(LBF)
CAVITY FORCE	=596.	(LBF)
CALCULATED LOAD CELL FORCE	=1474.	(LBF)
MEASURED LOAD CELL FORCE	=1449.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0, =142.6, =115.4,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7349	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.619	(IN)
NOZZLE SHROUD TRAILING EDGE	74.959	(IN)
NOZZLE PLUG TRAILING EDGE	88.711	(IN)
STRUT LEADING EDGE	57.875	(IN)
STRUT TRAILING EDGE	66.475	(IN)
COMBUSTOR EXIT	66.475	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9876	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1000	
DELTA PT2	0.0876	(PSI)
TOTAL PRESSURE RECOVERY = SUPERSONIC	0.3280	
TOTAL PRESSURE RECOVERY = SUBSONIC	0.1013	
INLET PROCESS EFFICIENCY = SUPERSONIC	0.9052	
INLET PROCESS EFFICIENCY = SUBSONIC	0.9127	
KINETIC ENERGY EFFICIENCY = SUPERSONIC	0.9282	
KINETIC ENERGY EFFICIENCY = SUBSONIC	0.8780	
ENTHALPY AT PO = SUPERSONIC	=27.94	(BTU/LBM)
ENTHALPY AT PO = SUBSONIC	12.44	(BTU/LBM)

COMBUSTOR

FUEL=AIR RATIO	0.0270
EQUIVALENCE RATIO	0.861
COMBUSTOR EFFICIENCY	0.053
TOTAL PRESSURE RATIO	0.0884
COMBUSTOR EFFECTIVENESS	0.1716
INJECTOR DISCHARGE COEFFICIENTS	0.8473, 0.7576, 0.8961, 0.7459

NOZZLE

VACUUM STREAM THRUST COEFFICIENT = CS	0.9796
NOZZLE COEFFICIENT = CT	0.9334
PROCESS EFFICIENCY	0.9342
KINETIC ENERGY EFFICIENCY	0.9566

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.720	
1C	44.300	
2A	50.195	D
2C	46.250	F
3A	55.485	
3B	57.670	
4	46.220	C

Reading 88

t = 285.90 sec.

Combustor pressure distributions indicate the injected fuel did not ignite.

Fuel ignition during the second fuel schedule appeared to occur at about time 290 seconds when the fuel flow rate from injector 4 reached a peak prior to a fuel flow decrease (see fig. 6(a)).

2/12/75

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H		GAMMA	MOL-T	SONV	MACH	VEL	S	W/A		A/AC	MURTP	C	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6															
0.000	998.749	3248	746.3(	869)	1.2857	28.903	2680											
0.000	0.154	318	-52.9(	76)	1.3970	28.901	874	7.238	6324	1.832	0.05721	14.475	0.9878	2884	5.622	199.2		
SPIKE TIP NS		2	0 8															
0.600	11.325	3248	746.3(	869)	1.2848	28.901	2679											
0.600	10.471	3191	728.9(	852)	1.2867	28.901	2658	0.351	932	2.140	0.05721	14.475	0.9878	3069	0.829	212.0		
WIND TUNNEL		3	0 0															
0.000	998.749	3248	746.3(	869)	1.2857	28.903	2680											
0.000	0.171	327	-50.5(	79)	1.3973	28.901	887	7.119	6314	1.832	0.06161	15.589	0.9878	3103	6.046	199.0		
SPIKE TIP NS		4	0 0															
0.600	11.325	3248	746.3(	869)	1.2848	28.901	2679											
0.600	10.317	3181	725.6(	849)	1.2870	28.901	2654	0.383	1016	2.140	0.06161	15.589	0.9878	3103	0.972	199.0		
INLET THROAT		5	0 2															
40.400	326.362	3145	714.5(	839)	1.2888	28.902	2641											
40.400	10.306	1354	204.1(	333)	1.3569	28.902	1778	2.842	5054	1.899	0.71921	14.475	0.0786	2481	56.487	171.4		
INLET UPNRSK		6	0 3															
40.400	326.362	3145	714.5(	839)	1.2888	28.902	2641											
40.400	8.896	1303	190.6(	320)	1.3601	28.931	1746	2.933	5120	1.899	0.65383	14.475	0.0864	2500	52.024	172.7		
INLET DNHRSK		7	0 4															
40.400	101.367	3145	714.5(	839)	1.2887	28.902	2641											
40.400	88.444	3050	685.8(	810)	1.2917	28.902	2603	0.463	1206	1.979	0.65383	14.475	0.0864	2500	12.250	172.7		
COMBUSTOR	0	8	1 21															
40.410	247.403	3090	721.3(	874)	1.2920	27.117	2706											
40.410	10.359	1423	216.8(	374)	1.3545	27.117	1880	2.672	5025	2.018	0.72283	14.550	0.0786	2461	56.444	170.5	0.17	0.07
COMBUSTOR	0	9	2 3															
40.745	258.535	3036	719.1(	858)	1.2945	27.046	2687											
40.745	12.049	1433	234.4(	377)	1.3545	27.065	1888	2.608	4925	2.010	0.72550	14.550	0.0783	2469	55.523	169.7	0.17	0.02
COMBUSTOR	0	10	3 21															
41.235	227.030	3012	715.7(	850)	1.2955	27.050	2678											
41.235	8.413	1336	211.7(	350)	1.3602	27.050	1828	2.748	5022	2.017	0.71973	14.550	0.0789	2441	56.168	167.8	0.17	0.00
COMBUSTOR	0	11	4 21															
41.500	209.659	3004	713.8(	848)	1.2958	27.048	2675											
41.500	6.906	1381	224.8(	363)	1.3576	27.048	1856	2.665	4947	2.022	0.71284	14.550	0.0797	2419	54.798	166.2	0.17	0.00
COMBUSTOR	0	12	5 21															
42.460	131.624	2983	707.0(	841)	1.2965	27.048	2666											
42.460	4.928	1324	209.2(	347)	1.3609	27.047	1820	2.742	4991	2.054	0.67175	14.550	0.0846	2364	52.100	162.5	0.17	0.00
COMBUSTOR	0	13	6 21															
42.730	72.061	3436	705.1(	977)	1.2739	27.564	2810											
42.730	5.224	1867	215.2(	496)	1.3287	27.568	2115	2.341	4952	2.128	0.66300	14.550	0.0857	2354	51.019	161.8	0.17	0.55
COMBUSTOR	0	14	7 21															
42.795	116.547	3045	704.7(	860)	1.2933	27.123	2687											
42.795	5.295	1430	216.6(	376)	1.3541	27.123	1884	2.623	4942	2.068	0.66138	14.550	0.0859	2361	50.796	161.6	0.17	0.08
COMBUSTOR	0	15	8 21															
44.310	126.573	2960	696.5(	834)	1.2969	27.059	2656											
44.310	8.794	1544	267.7(	409)	1.3485	27.059	1956	2.368	4633	2.054	0.61160	14.550	0.0929	2304	44.031	158.4	0.17	0.01
COMBUSTOR	0	16	9 21															
44.800	125.098	2945	694.4(	829)	1.2976	27.049	2650											
44.800	9.926	1588	283.0(	421)	1.3463	27.049	1983	2.289	4537	2.053	0.60402	14.550	0.0940	2291	42.589	157.5	0.17	0.00
COMBUSTOR	0	17	10 21															
45.515	120.632	2934	691.4(	826)	1.2980	27.048	2646											
45.515	11.182	1646	300.0(	438)	1.3435	27.047	2016	2.195	4425	2.055	0.59953	14.550	0.0948	2273	41.233	156.2	0.17	0.00
COMBUSTOR	0	18	11 21															
46.220	99.780	2890	694.6(	854)	1.3006	25.670	2698											
46.220	11.345	1702	315.3(	479)	1.3424	25.670	2104	2.071	4356	2.152	0.58546	14.614	0.0975	2262	39.635	154.8	0.31	0.03

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	M	A/AC	MOMTM	D	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.230	104.239	2844	694.5(800)	1.3027	25.623	2681											
46.230	11.348	1652	315.4(463)	1.3452	25.623	2077	2.097	4355	2.144	0.58584	14.616	0.0975	2262	39.627	154.8	0.31	0.01
COMBUSTOR	0	20	13 21														
46.250	75.966	2780	708.2(904)	1.3072	23.137	2795											
46.250	11.392	1742	344.4(502)	1.3441	23.137	2243	1.902	4267	2.343	0.59006	14.756	0.0976	2241	39.126	151.9	0.63	0.04
COMBUSTOR	0	21	14 21														
46.260	82.070	2691	708.2(873)	1.3113	23.056	2759											
46.260	11.355	1646	344.5(511)	1.3492	23.056	2189	1.949	4266	2.327	0.58965	14.756	0.0977	2241	39.092	151.9	0.63	0.01
COMBUSTOR	0	22	15 21														
47.310	78.037	2665	703.4(864)	1.3124	23.044	2747											
47.310	11.598	1659	353.4(515)	1.3488	23.044	2197	1.905	4185	2.327	0.54668	14.756	0.1054	2232	35.553	151.3	0.63	0.00
COMBUSTOR	0	23	16 21														
48.110	73.192	2652	699.7(859)	1.3128	23.043	2741											
48.110	10.423	1632	345.3(507)	1.3500	23.043	2181	1.931	4211	2.331	0.50238	14.756	0.1147	2238	32.877	151.6	0.63	0.00
COMBUSTOR	0	24	17 21														
48.755	69.004	2644	696.8(856)	1.3131	23.042	2737											
48.755	8.650	1574	326.0(487)	1.3528	23.042	2143	2.010	4308	2.335	0.45619	14.756	0.1263	2255	30.539	152.8	0.63	0.00
COMBUSTOR	0	25	18 21														
50.195	50.341	2598	703.4(910)	1.3163	21.214	2831											
50.195	7.656	1620	337.0(545)	1.3526	21.214	2266	1.890	4282	2.517	0.37444	14.885	0.1552	2285	24.916	153.5	0.91	0.02
COMBUSTOR	0	26	19 21														
50.205	53.930	2525	703.4(882)	1.3198	21.153	2797											
50.205	7.649	1539	336.9(517)	1.3571	21.153	2216	1.933	4282	2.500	0.37395	14.885	0.1554	2286	24.886	153.6	0.91	0.00
COMBUSTOR	0	27	20 21														
50.735	53.556	2507	701.7(877)	1.3204	21.145	2790											
50.735	7.283	1512	331.4(507)	1.3585	21.144	2198	1.959	4304	2.499	0.34973	14.885	0.1662	2301	23.394	154.6	0.91	0.00
COMBUSTOR	0	28	21 21														
52.145	53.206	2495	697.6(872)	1.3209	21.143	2784											
52.145	7.887	1538	341.5(517)	1.3573	21.143	2216	1.905	4221	2.497	0.29807	14.885	0.1950	2347	19.553	157.7	0.91	0.00
COMBUSTOR	0	29	22 21														
54.245	44.235	2474	690.1(867)	1.3216	21.077	2777											
54.245	3.150	1253	240.3(418)	1.3714	21.077	2013	2.356	4744	2.518	0.24508	14.932	0.2379	2394	18.069	160.3	0.91	0.00
COMBUSTOR	0	30	23 21														
54.745	45.103	2467	689.0(864)	1.3219	21.074	2774											
54.745	3.358	1265	245.7(422)	1.3708	21.074	2022	2.329	4710	2.515	0.23506	14.932	0.2480	2399	17.205	160.7	0.91	0.00
COMBUSTOR	0	31	24 21														
55.495	44.315	2463	687.6(863)	1.3220	21.073	2772											
55.495	3.230	1255	242.5(418)	1.3713	21.073	2015	2.342	4719	2.516	0.22158	14.932	0.2631	2408	16.250	161.2	0.91	0.00
COMBUSTOR	0	32	25 21														
55.760	44.043	2462	687.0(862)	1.3221	21.073	2771											
55.760	3.185	1251	241.3(417)	1.3715	21.073	2012	2.347	4723	2.517	0.21721	14.932	0.2684	2411	15.941	161.4	0.91	0.00
COMBUSTOR	0	33	26 21														
56.255	34.274	2529	686.1(887)	1.3189	21.129	2801											
56.255	2.322	1268	220.7(422)	1.3701	21.129	2022	2.386	4826	2.550	0.17142	14.932	0.3401	2442	12.856	163.5	0.91	0.02
COMBUSTOR	0	34	27 3														
57.680	34.592	2576	683.6(904)	1.3167	21.173	2822											
57.680	3.730	1467	270.0(492)	1.3596	21.173	2164	2.102	4549	2.554	0.15844	14.932	0.3679	2463	11.201	164.9	0.91	0.03
COMBUSTOR	0	35	28 21														
57.735	39.336	2471	683.5(865)	1.3215	21.088	2775											
57.735	2.927	1267	239.7(422)	1.3706	21.088	2023	2.329	4713	2.529	0.15802	14.932	0.3689	2464	11.573	165.0	0.91	0.00
COMBUSTOR	0	36	29 21														
57.875	40.306	2455	683.3(859)	1.3223	21.076	2767											
57.875	2.958	1252	240.7(418)	1.3714	21.075	2013	2.338	4706	2.524	0.15689	14.932	0.3716	2466	11.474	165.1	0.91	0.00
COMBUSTOR	0	37	30 4														
57.955	33.785	2609	683.2(916)	1.3152	21.200	2836											
57.955	3.851	1510	272.4(507)	1.3572	21.200	2192	2.068	4534	2.561	0.15861	14.932	0.3675	2467	11.176	165.2	0.91	0.04

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                 P      T      H              GAMMA  MOLWT SONV  MACH   VEL   S      W/A      W      A/AC    MOMTH    G     TVAC  PHI  ETAC
COMBUSTOR        0     38   31    3
58.235      32.757 2644   682.7( 929) 1.3135 21.230 2852
58.235       3.975 1559   275.6( 520) 1.3544 21.230 2224 2.030 4514 2.568 0.15809 14.932 0.3686    2470 11.089 165.4 0.91 0.05
COMBUSTOR        0     39   32    4
58.461      37.752 2524   682.4( 885) 1.3190 21.133 2799
58.461       3.404 1367   253.3( 457) 1.3650 21.133 2095 2.211 4634 2.540 0.15779 14.932 0.3695    2473 11.362 165.6 0.91 0.08
COMBUSTOR        0     40   33   21
59.185      36.310 2458   681.3( 860) 1.3220 21.082 2768
59.185       1.575 1087   180.3( 360) 1.3796 21.082 1860 2.663 5007 2.534 0.15534 14.932 0.3753    2475 12.088 165.8 0.91 0.00
COMBUSTOR        0     41   34   21
60.205      39.753 2445   680.0( 856) 1.3226 21.075 2762
60.205       2.050 1135   199.6( 376) 1.3774 21.075 1918 2.556 4903 2.524 0.15436 14.932 0.3777    2474 11.760 165.7 0.91 0.00
COMBUSTOR        0     42   35   21
62.215      41.537 2439   678.0( 853) 1.3228 21.074 2759
62.215       2.737 1207   226.0( 402) 1.3737 21.073 1978 2.404 4756 2.518 0.15973 14.932 0.3650    2463 11.805 165.0 0.91 0.00
COMBUSTOR        0     43   36   21
63.635      38.994 2435   676.7( 852) 1.3230 21.073 2757
63.635       1.962 1120   195.9( 372) 1.3780 21.073 1908 2.971 4905 2.524 0.16406 14.932 0.3593    2455 12.806 164.4 0.91 0.00
COMBUSTOR        0     44   37    4
66.099      37.003 2456   674.0( 859) 1.3219 21.096 2766
66.099       3.279 1319   254.3( 440) 1.3679 21.096 2062 2.222 4582 2.532 0.15591 14.932 0.3749    2441 11.074 163.5 0.91 0.01
COMBUSTOR        0     45   38    4
66.475      27.360 2659   673.5( 934) 1.3125 21.262 2857
66.475       3.938 1640   290.0( 592) 1.3903 21.262 2276 1.925 4381 2.585 0.14457 14.932 0.4032    2439  9.842 163.4 0.91 0.06
COMBUSTOR    REGEN     46   39    3
66.475      27.360 2702   690.5( 951) 1.3111 21.262 2878
66.475       4.002 1677   303.1( 565) 1.3487 21.262 2300 1.915 4403 2.592 0.14457 14.932 0.4032    2457  9.892 164.5 0.91 0.06
NOZZLE   AE            47   40    4
88.711      27.360 2659   673.5( 934) 1.3125 21.262 2857
88.711       0.313  829     8.0( 270) 1.3896 21.262 1638 3.524 5771 2.585 0.03009 14.932 1.9372    2834  2.699 189.8 0.91 0.06
NOZZLE   PO            48   41    4
88.711      27.360 2659   673.5( 934) 1.3125 21.262 2857
88.711       0.154  676   -41.8( 220) 1.3950 21.262 1484 4.030 5983 2.585 0.01672 14.932 3.1139    2849  1.741 194.2 0.91 0.06
NOZZLE   AE REGEN      49   42    4
88.711      27.360 2702   690.5( 951) 1.3111 21.262 2878
88.711       0.318  845    14.5( 277) 1.3888 21.262 1656 3.511 5816 2.592 0.03009 14.932 1.9372    2857  2.720 191.3 0.91 0.06
NOZZLE   PO REGEN      50   43    4
88.711      27.360 2702   690.5( 951) 1.3111 21.262 2878
88.711       0.154  689   -37.4( 225) 1.3946 21.262 1499 4.028 6035 2.592 0.01853 14.932 3.1465    2925  1.736 195.9 0.91 0.06
FICTIVE COMBUSTR       69   62    0
66.475     326.362 5476   673.5(2021) 1.1631 24.048 3629
66.475       0.154 1206-1233.9( 363) 1.3394 24.667 1804 5.415 9770 2.520 0.01987 14.932 2.9336    4650  3.017 311.4 0.91 1.00
FICTIVE NOZZLE         70   63    0
88.711      17.599 2633   663.3( 924) 1.3134 21.262 2844
88.711       0.391  982    60.5( 323) 1.3828 21.262 1782 3.082 5492 2.623 0.03010 14.932 1.9371    2743  2.569 183.7 0.91 0.06
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XARS	P-IB	P-OB	PPA	QOX	Q-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.735E-01	0.000	0.000	0.000	2.470E-02	4.491E 00	6.909E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.491E 00	6.909E-04	0.000	0.000
3.070E 01	1.020E 00	0.000	-9.228E 01	0.000	0.000	0.000	5.053E 02	6.639E 00	1.021E-03	0.000	0.000
3.508E 01	1.881E 00	0.000	-1.863E 02	0.000	0.000	0.000	6.804E 02	1.224E 01	1.884E-03	0.000	0.000
3.555E 01	2.110E 00	0.000	-2.045E 02	0.000	0.000	0.000	7.013E 02	1.373E 01	2.113E-03	0.000	0.000
3.606E 01	2.060E 00	0.000	-2.256E 02	-2.019E 02	-2.019E 02	0.000	7.246E 02	1.341E 01	2.063E-03	0.000	0.000
3.648E 01	2.271E 00	0.000	-2.442E 02	-2.068E 02	-2.068E 02	0.000	7.443E 02	1.478E 01	2.273E-03	0.000	0.000
3.661E 01	2.304E 00	3.255E 00	-2.841E 02	-2.084E 02	-2.084E 02	0.000	7.506E 02	1.500E 01	2.307E-03	2.119E 01	3.259E-03
3.662E 01	2.306E 00	3.271E 00	-2.841E 02	-2.085E 02	-2.085E 02	0.000	7.508E 02	1.501E 01	2.309E-03	2.129E 01	3.275E-03
3.701E 01	2.405E 00	4.271E 00	-2.863E 02	-2.133E 02	-2.133E 02	0.000	7.914E 02	1.565E 01	2.408E-03	2.780E 01	4.277E-03
3.728E 01	2.299E 00	4.975E 00	-2.861E 02	-2.168E 02	-2.168E 02	0.000	8.203E 02	1.496E 01	2.301E-03	3.238E 01	4.981E-03
3.803E 01	2.010E 00	8.308E 00	-2.698E 02	-2.267E 02	-2.267E 02	0.000	9.005E 02	1.308E 01	2.013E-03	5.408E 01	8.318E-03
3.874E 01	6.679E 00	1.151E 01	-2.679E 02	-3.084E 02	-2.387E 02	-6.968E 01	9.801E 02	4.347E 01	6.687E-03	7.489E 01	1.152E-02
3.875E 01	6.712E 00	1.149E 01	-2.680E 02	-3.088E 02	-2.388E 02	-7.001E 01	9.807E 02	4.369E 01	6.720E-03	7.478E 01	1.150E-02
3.901E 01	8.410E 00	1.063E 01	-2.727E 02	-3.309E 02	-2.442E 02	-8.675E 01	1.010E 03	5.474E 01	8.421E-03	6.918E 01	1.064E-02
3.950E 01	1.150E 01	9.008E 00	-2.906E 02	-3.742E 02	-2.560E 02	-1.182E 02	1.066E 03	7.484E 01	1.151E-02	5.863E 01	9.019E-03
3.976E 01	1.103E 01	8.131E 00	-3.005E 02	-3.986E 02	-2.635E 02	-1.351E 02	1.097E 03	7.180E 01	1.105E-02	5.293E 01	8.141E-03
4.000E 01	1.062E 01	7.828E 00	-3.069E 02	-4.208E 02	-2.707E 02	-1.502E 02	1.124E 03	6.912E 01	1.063E-02	5.095E 01	7.838E-03
4.023E 01	1.143E 01	7.525E 00	-3.136E 02	-4.435E 02	-2.784E 02	-1.651E 02	1.151E 03	7.437E 01	1.144E-02	4.898E 01	7.534E-03
4.040E 01	1.199E 01	8.624E 00	-3.183E 02	-4.596E 02	-2.840E 02	-1.756E 02	1.171E 03	7.807E 01	1.201E-02	5.613E 01	8.634E-03
4.041E 01	1.203E 01	8.690E 00	-3.184E 02	-4.606E 02	-2.844E 02	-1.763E 02	1.172E 03	7.829E 01	1.204E-02	5.656E 01	8.701E-03
4.074E 01	1.318E 01	1.092E 01	-3.249E 02	-4.938E 02	-2.963E 02	-1.975E 02	1.211E 03	8.578E 01	1.320E-02	7.107E 01	1.093E-02
4.123E 01	1.486E 01	1.962E 00	-3.447E 02	-5.432E 02	-3.151E 02	-2.281E 02	1.269E 03	9.675E 01	1.488E-02	1.277E 01	1.965E-03
4.150E 01	1.577E 01	2.037E 00	-3.627E 02	-5.703E 02	-3.260E 02	-2.443E 02	1.300E 03	1.027E 02	1.579E-02	1.326E 01	2.039E-03
4.246E 01	7.550E 00	2.306E 00	-4.023E 02	-6.695E 02	-3.678E 02	-3.016E 02	1.414E 03	4.914E 01	7.559E-03	1.501E 01	2.309E-03
4.273E 01	8.066E 00	2.382E 00	-4.077E 02	-6.963E 02	-3.797E 02	-3.165E 02	1.446E 03	5.250E 01	8.076E-03	1.550E 01	2.385E-03
4.279E 01	8.191E 00	2.400E 00	-4.090E 02	-7.024E 02	-3.825E 02	-3.199E 02	1.454E 03	5.331E 01	8.201E-03	1.562E 01	2.403E-03
4.431E 01	1.109E 01	6.501E 00	-4.309E 02	-8.214E 02	-4.423E 02	-3.791E 02	1.637E 03	7.217E 01	1.110E-02	4.231E 01	6.509E-03
4.480E 01	1.202E 01	7.827E 00	-4.371E 02	-8.522E 02	-4.593E 02	-3.929E 02	1.696E 03	7.827E 01	1.204E-02	5.095E 01	7.837E-03
4.551E 01	1.260E 01	9.762E 00	-4.454E 02	-8.959E 02	-4.828E 02	-4.131E 02	1.783E 03	8.202E 01	1.262E-02	6.354E 01	9.775E-03
4.622E 01	1.317E 01	9.520E 00	-4.459E 02	-9.400E 02	-5.052E 02	-4.348E 02	1.870E 03	8.573E 01	1.319E-02	6.197E 01	9.532E-03
4.623E 01	1.318E 01	9.517E 00	-4.460E 02	-9.406E 02	-5.055E 02	-4.352E 02	1.871E 03	8.578E 01	1.320E-02	6.194E 01	9.529E-03
4.625E 01	1.319E 01	9.510E 00	-4.458E 02	-9.419E 02	-5.061E 02	-4.358E 02	1.873E 03	8.588E 01	1.321E-02	6.190E 01	9.522E-03
4.626E 01	1.320E 01	9.507E 00	-4.457E 02	-9.426E 02	-5.064E 02	-4.362E 02	1.875E 03	8.594E 01	1.322E-02	6.188E 01	9.519E-03
4.731E 01	1.405E 01	9.146E 00	-4.398E 02	-1.013E 03	-5.383E 02	-4.745E 02	2.004E 03	9.145E 01	1.407E-02	5.953E 01	9.158E-03
4.811E 01	1.197E 01	8.871E 00	-4.249E 02	-1.067E 03	-5.614E 02	-5.058E 02	2.103E 03	7.794E 01	1.199E-02	5.774E 01	8.883E-03
4.875E 01	8.650E 00	8.650E 00	-3.996E 02	-1.111E 03	-5.794E 02	-5.312E 02	2.183E 03	5.630E 01	8.661E-03	5.630E 01	8.661E-03
5.019E 01	7.656E 00	7.656E 00	-3.391E 02	-1.196E 03	-6.172E 02	-5.786E 02	2.363E 03	4.983E 01	7.666E-03	4.983E 01	7.666E-03
5.020E 01	7.649E 00	7.649E 00	-3.387E 02	-1.196E 03	-6.174E 02	-5.789E 02	2.365E 03	4.979E 01	7.659E-03	4.979E 01	7.659E-03
5.073E 01	7.283E 00	7.283E 00	-3.181E 02	-1.222E 03	-6.306E 02	-5.916E 02	2.431E 03	4.741E 01	7.292E-03	4.741E 01	7.292E-03
5.214E 01	7.887E 00	7.887E 00	-2.620E 02	-1.283E 03	-6.635E 02	-6.192E 02	2.609E 03	5.134E 01	7.897E-03	5.134E 01	7.897E-03
5.424E 01	3.150E 00	3.150E 00	-2.013E 02	-1.358E 03	-7.071E 02	-6.510E 02	2.875E 03	2.050E 01	3.154E-03	2.050E 01	3.154E-03
5.474E 01	3.358E 00	3.358E 00	-1.928E 02	-1.374E 03	-7.165E 02	-6.570E 02	2.939E 03	2.186E 01	3.363E-03	2.186E 01	3.363E-03
5.549E 01	3.230E 00	3.230E 00	-1.800E 02	-1.396E 03	-7.299E 02	-6.658E 02	3.035E 03	2.102E 01	3.234E-03	2.102E 01	3.234E-03
5.576E 01	3.185E 00	3.185E 00	-1.757E 02	-1.403E 03	-7.345E 02	-6.690E 02	3.068E 03	2.073E 01	3.189E-03	2.073E 01	3.189E-03
5.625E 01	1.544E 00	3.100E 00	-1.433E 02	-1.417E 03	-7.424E 02	-6.749E 02	3.102E 03	1.005E 01	1.546E-03	2.018E 01	3.104E-03
5.768E 01	3.730E 00	3.730E 00	-1.190E 02	-1.454E 03	-7.621E 02	-6.924E 02	3.209E 03	2.428E 01	3.734E-03	2.428E 01	3.734E-03
5.773E 01	2.100E 00	3.754E 00	-1.179E 02	-1.456E 03	-7.628E 02	-6.930E 02	3.217E 03	1.367E 01	2.103E-03	2.443E 01	3.759E-03
5.787E 01	2.100E 00	3.816E 00	-1.154E 02	-1.459E 03	-7.646E 02	-6.948E 02	3.234E 03	1.367E 01	2.103E-03	2.484E 01	3.821E-03
5.795E 01	3.851E 00	3.851E 00	-1.139E 02	-1.461E 03	-7.656E 02	-6.958E 02	3.245E 03	2.507E 01	3.856E-03	2.507E 01	3.856E-03
5.823E 01	3.975E 00	3.975E 00	-1.088E 02	-1.468E 03	-7.689E 02	-6.992E 02	3.280E 03	2.587E 01	3.980E-03	2.587E 01	3.980E-03
5.846E 01	3.404E 00	3.404E 00	-1.052E 02	-1.473E 03	-7.716E 02	-7.018E 02	3.309E 03	2.216E 01	3.408E-03	2.216E 01	3.408E-03
5.918E 01	1.575E 00	1.575E 00	-9.844E 01	-1.490E 03	-7.794E 02	-7.102E 02	3.402E 03	1.025E 01	1.577E-03	1.025E 01	1.577E-03
6.020E 01	2.050E 00	2.050E 00	-9.424E 01	-1.509E 03	-7.891E 02	-7.200E 02	3.532E 03	1.334E 01	2.053E-03	1.334E 01	2.053E-03
6.221E 01	2.737E 00	2.737E 00	-9.368E 01	-1.538E 03	-8.042E 02	-7.338E 02	3.790E 03	1.782E 01	2.741E-03	1.782E 01	2.741E-03
6.363E 01	1.962E 00	1.962E 00	-9.368E 01	-1.558E 03	-8.132E 02	-7.448E 02	3.972E 03	1.277E 01	1.965E-03	1.277E 01	1.965E-03

XABS	P-IR	P-OR	PDA	POX	G-IR	G-OR	CA-ALT	P-IR/PSO	P-IR/PTO	P-OR/PSO	P-OR/PTO
6.610E 01	3.279E 00	3.279E 00	-9.368E 01	-1.590E 03	-8.292E 02	-7.695E 02	4.269E 03	2.134E 01	3.283E-03	2.134E 01	3.283E-03
6.647E 01	4.390E 00	3.479E 00	-9.368E 01	-1.605E 03	-8.317E 02	-7.736E 02	4.337E 03	2.857E 01	4.395E-03	2.265E 01	3.484E-03
6.651E 01	4.390E 00	3.501E 00	-9.368E 01	-1.606E 03	-8.320E 02	-7.740E 02	4.342E 03	2.857E 01	4.395E-03	2.279E 01	3.505E-03
6.671E 01	4.228E 00	3.607E 00	-9.368E 01	-1.610E 03	-8.333E 02	-7.763E 02	4.368E 03	2.752E 01	4.233E-03	2.348E 01	3.612E-03
6.837E 01	2.885E 00	1.680E 00	-6.034E 01	-1.636E 03	-8.426E 02	-7.934E 02	4.584E 03	1.878E 01	2.889E-03	1.093E 01	1.682E-03
6.904E 01	2.143E 00	1.432E 00	-1.906E 01	-1.645E 03	-8.458E 02	-7.995E 02	4.665E 03	1.395E 01	2.146E-03	9.324E 00	1.434E-03
6.981E 01	1.290E 00	1.196E 00	2.404E 01	-1.657E 03	-8.490E 02	-8.078E 02	4.760E 03	8.396E 00	1.292E-03	7.785E 00	1.198E-03
7.053E 01	1.195E 00	9.750E-01	5.485E 01	-1.670E 03	-8.518E 02	-8.182E 02	4.848E 03	7.780E 00	1.197E-03	6.346E 00	9.762E-04
7.114E 01	1.115E 00	9.585E-01	7.838E 01	-1.681E 03	-8.543E 02	-8.265E 02	4.922E 03	7.257E 00	1.116E-03	6.239E 00	9.597E-04
7.252E 01	7.900E-01	9.213E-01	1.224E 02	-1.695E 03	-8.597E 02	-8.354E 02	5.088E 03	5.142E 00	7.910E-04	5.997E 00	9.224E-04
7.405E 01	4.849E-01	8.800E-01	1.585E 02	-1.709E 03	-8.649E 02	-8.441E 02	5.273E 03	3.156E 00	4.855E-04	5.728E 00	8.811E-04
7.420E 01	4.550E-01	7.667E-01	1.612E 02	-1.711E 03	-8.653E 02	-8.456E 02	5.290E 03	2.962E 00	4.556E-04	4.990E 00	7.676E-04
7.495E 01	5.073E-01	2.000E-01	1.776E 02	-1.722E 03	-8.673E 02	-8.543E 02	5.374E 03	3.302E 00	5.079E-04	1.302E 00	2.003E-04
7.496E 01	5.076E-01	1.970E-01	1.780E 02	-1.722E 03	-8.673E 02	-8.543E 02	5.375E 03	3.304E 00	5.082E-04	1.282E 00	1.972E-04
7.628E 01	6.000E-01	0.000	1.897E 02	-1.743E 03	-8.702E 02	-8.726E 02	5.426E 03	3.905E 00	6.008E-04	0.000	0.000
7.913E 01	2.000E-01	0.000	2.057E 02	-1.747E 03	-8.747E 02	-8.726E 02	5.525E 03	1.302E 00	2.003E-04	0.000	0.000
8.303E 01	2.350E-01	0.000	2.150E 02	-1.751E 03	-8.781E 02	-8.726E 02	5.630E 03	1.530E 00	2.353E-04	0.000	0.000
8.584E 01	2.850E-01	0.000	2.208E 02	-1.753E 03	-8.805E 02	-8.726E 02	5.684E 03	1.855E 00	2.854E-04	0.000	0.000
8.870E 01	3.650E-01	0.000	2.286E 02	-1.757E 03	-8.849E 02	-8.726E 02	5.707E 03	2.376E 00	3.655E-04	0.000	0.000
8.871E 01	3.652E-01	0.000	2.286E 02	-1.757E 03	-8.849E 02	-8.726E 02	5.707E 03	2.377E 00	3.656E-04	0.000	0.000

READING = CORB BLOCK = 186 TIME = 285.901 MACH 7.2 PT = 998.749 TT = 3248.2

X	DDRAG	CDRAG	CP	HC
4.040E 01	8.486E 01	8.486E 01	2.277E-03	3.403E-02
4.041E 01	1.666E-01	8.503E 01	2.760E-03	3.271E-02
4.074E 01	5.718E 00	9.075E 01	2.450E-03	3.925E-02
4.123E 01	7.857E 00	9.860E 01	2.434E-03	3.017E-02
4.150E 01	4.292E 00	1.029E 02	2.464E-03	3.122E-02
4.246E 01	1.552E 01	1.184E 02	2.625E-03	1.936E-02
4.273E 01	4.360E 00	1.227E 02	2.431E-03	2.012E-02
4.279E 01	1.141E 00	1.239E 02	3.125E-03	1.835E-02
4.431E 01	2.538E 01	1.493E 02	2.738E-03	2.820E-02
4.480E 01	7.007E 00	1.563E 02	2.702E-03	3.093E-02
4.551E 01	9.931E 00	1.662E 02	2.728E-03	3.343E-02
4.622E 01	1.011E 01	1.763E 02	3.064E-03	3.182E-02
4.623E 01	1.443E-01	1.765E 02	2.827E-03	3.403E-02
4.625E 01	2.991E-01	1.768E 02	3.401E-03	3.103E-02
4.626E 01	1.545E-01	1.769E 02	2.979E-03	3.506E-02
4.731E 01	1.422E 01	1.911E 02	2.906E-03	3.543E-02
4.811E 01	9.811E 00	2.009E 02	2.880E-03	3.238E-02
4.875E 01	7.279E 00	2.082E 02	2.842E-03	2.803E-02
5.019E 01	1.534E 01	2.236E 02	3.307E-03	2.238E-02
5.020E 01	1.030E-01	2.237E 02	3.307E-03	2.238E-02
5.073E 01	4.927E 00	2.286E 02	2.833E-03	2.438E-02
5.214E 01	1.068E 01	2.393E 02	2.769E-03	2.498E-02
5.424E 01	1.368E 01	2.529E 02	2.693E-03	1.289E-02
5.474E 01	2.999E 00	2.559E 02	2.644E-03	1.350E-02
5.549E 01	4.218E 00	2.602E 02	2.620E-03	1.300E-02
5.576E 01	1.429E 00	2.616E 02	2.612E-03	1.283E-02
5.625E 01	1.239E 00	2.628E 02	2.543E-03	9.721E-03
5.768E 01	3.341E 00	2.662E 02	2.617E-03	1.299E-02
5.773E 01	2.110E-01	2.664E 02	2.643E-03	1.088E-02
5.787E 01	5.296E-01	2.669E 02	2.529E-03	1.130E-02
5.795E 01	3.069E-01	2.672E 02	2.766E-03	1.267E-02
5.823E 01	1.083E 00	2.683E 02	2.686E-03	1.321E-02
5.846E 01	8.708E-01	2.692E 02	2.694E-03	1.181E-02
5.918E 01	2.850E 00	2.720E 02	2.554E-03	7.075E-03
6.020E 01	3.903E 00	2.759E 02	2.454E-03	8.720E-03
6.221E 01	7.461E 00	2.834E 02	2.457E-03	1.071E-02
6.363E 01	5.426E 00	2.888E 02	2.404E-03	8.474E-03
6.610E 01	9.242E 00	2.981E 02	2.515E-03	1.195E-02
6.647E 01	1.296E 00	2.993E 02	2.622E-03	1.311E-02
6.651E 01	1.371E-01	2.995E 02	2.801E-03	1.241E-02
6.671E 01	7.068E-01	3.002E 02	2.798E-03	1.235E-02
6.837E 01	5.254E 00	3.054E 02	2.685E-03	8.576E-03
6.904E 01	1.631E 00	3.071E 02	2.636E-03	7.226E-03
6.981E 01	1.599E 00	3.087E 02	2.564E-03	5.576E-03
7.053E 01	1.277E 00	3.099E 02	2.534E-03	5.048E-03
7.114E 01	1.016E 00	3.110E 02	2.525E-03	4.882E-03
7.252E 01	2.125E 00	3.131E 02	2.488E-03	4.242E-03
7.405E 01	2.063E 00	3.152E 02	2.439E-03	3.587E-03
7.420E 01	1.730E-01	3.153E 02	2.420E-03	3.308E-03
7.495E 01	6.925E-01	3.160E 02	2.325E-03	2.216E-03
7.496E 01	1.093E-03	3.160E 02	2.325E-03	2.209E-03
7.628E 01	4.209E-01	3.164E 02	2.407E-03	3.251E-03
7.913E 01	6.826E-01	3.171E 02	2.217E-03	1.445E-03
8.303E 01	5.037E-01	3.176E 02	2.227E-03	1.614E-03
8.584E 01	2.940E-01	3.179E 02	2.246E-03	1.850E-03
8.870E 01	1.413E-01	3.181E 02	2.275E-03	2.207E-03

READING = 0088 BLOCK = 186 TIME = 289.901 MACH 7.2 PT = 998.749 TT = 3248.2

X	DRAG	CDRAG	CF	HC
8.871E 01	0.000	3.181E 02	2.275E-03	2.240E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-141.	(LBF)
MEASURED THRUST	-144.	(LBF)
CALCULATED SPECIFIC IMPULSE	-339.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-347.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.0981	
MEASURED THRUST COEFFICIENT	-.1002	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	2766.	(LBF)
NET THRUST	-119.	(LBF)
SPECIFIC IMPULSE	-285.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.0823	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.9	(LBF)
INLET MOMENTUM CHANGE	-403.1	(LBF)
COMBUSTOR FRICTION DRAG	214.5	(LBF)
COMBUSTOR STRUT DRAG	15.45	(LBF)
COMBUSTOR MOMENTUM CHANGE	-42.	(LBF)
NOZZLE FRICTION DRAG	18.72	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	304.	(LBF)
NOZZLE PRESSURE INTEGRAL	322.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-720.	(LBF)
TOTAL STRUT DRAG	15.45	(LBF)
CAVITY FORCE	-563.	(LBF)
CALCULATED LOAD CELL FORCE	-1424.	(LBF)
MEASURED LOAD CELL FORCE	-1427.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, -148.9, -120.3,

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7349	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.619	(IN)
NOZZLE SHROUD TRAILING EDGE	74.959	(IN)
NOZZLE PLUG TRAILING EDGE	88.711	(IN)
STRUT LEADING EDGE	57.875	(IN)
STRUT TRAILING EDGE	66.475	(IN)
COMBUSTOR EXIT	66.475	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9878	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1002	
DELTA PT2	0.0879	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3268	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1015	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9046	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9126	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9296	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8795	
ENTHALPY AT PO - SUPERSONIC	-28.34	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	11.65	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0287
EQUIVALENCE RATIO	0.915
COMBUSTOR EFFICIENCY	0.061
TOTAL PRESSURE RATIO	0.0838
COMBUSTOR EFFECTIVENESS	0.1901
INJECTOR DISCHARGE COEFFICIENTS	0.9371, 0.8809, 0.9556, 0.7729

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9681
NOZZLE COEFFICIENT - CT	0.9199
PROCESS EFFICIENCY	0.8685
KINETIC ENERGY EFFICIENCY	0.9306

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.720	
1C	44.300	
2A	50.195	D
2C	46.250	E
3A	55.485	
3B	57.670	
4	46.220	C

2/12/75

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READING = 0088  BLOCK = 195  TIME = 294.001  MACH  7.2  PT = 998.749  TT = 3203.3                                        PAGE  1
                                        RAMJET PERFORMANCE

                                      S U M M A R Y   R E P O R T

             P        T       H            GAMMA  MOLWT SONV  MACH  VEL    S       W/A       N      A/AC    MOMTM    C     IVAC  PHI  ETAC
WIND TUNNEL           1     0   6
 0.000    998.749 3203   732.4( 856) 1.2871 28.903 2663
 0.000      0.154  312   -54.2(  75) 1.3968 28.901  866 7.243 6274 1.828 0.05785 14.644 0.0883   2895  5.641 197.7
SPIKE TIP NS          2     0   7
 0.600     11.300 3203   732.4( 856) 1.2864 28.901 2662
 0.600     10.435 3146   715.0( 839) 1.2882 28.901 2641 0.353  933 2.136 0.05785 14.644 0.0883   3066  0.839 209.4
WIND TUNNEL           3     0   0
 0.000    998.749 3203   732.4( 856) 1.2871 28.903 2663
 0.000      0.170  321   -52.0(  77) 1.3971 28.901  878 7.133 6265 1.828 0.06197 15.686 0.0883   3098  6.034 197.8
SPIKE TIP NS          4     0   0
 0.600     11.300 3203   732.4( 856) 1.2864 28.901 2662
 0.600     10.292 3137   712.0( 836) 1.2885 28.901 2637 0.383 1010 2.136 0.06197 15.686 0.0883   3097  0.972 197.5
INLET THROAT          5     0   3
40.400    325.678 3106   702.5( 827) 1.2900 28.902 2625
40.400     10.386 1338   199.8( 329) 1.3579 28.901 1768 2.837 5015 1.895 0.72805 14.644 0.0785   2492 56.747 170.2
INLET UPNRBK          6     0   3
40.400    325.678 3106   702.5( 827) 1.2900 28.902 2625
40.400      8.964 1287   186.5( 316) 1.3610 28.901 1736 2.927 5081 1.895 0.66187 14.644 0.0864   2511 52.266 171.5
INLET DNNRBK          7     0   4
40.400    101.832 3106   702.5( 827) 1.2900 28.902 2625
40.400     88.809 3011   673.7( 799) 1.2929 28.902 2588 0.464 1200 1.975 0.66187 14.644 0.0864   2511 12.343 171.5
COMBUSTOR        0    8     1  21
40.410    246.225 3055   709.7( 862) 1.2931 27.129 2691
40.410     10.362 1406   212.1( 369) 1.3555 27.129 1869 2.670 4990 2.014 0.73169 14.720 0.0785   2491 56.742 169.3 0.17 0.07
COMBUSTOR        0    9     2   4
40.747    260.747 2992   707.4( 844) 1.2960 27.068 2669
40.747     12.047 1405   229.5( 369) 1.3561 27.067 1871 2.614 4890 2.004 0.73438 14.720 0.0783   2479 55.813 168.4 0.17 0.01
COMBUSTOR        0   10     3  21
41.237    225.944 2976   704.2( 839) 1.2966 27.061 2662
41.237      8.468 1321   208.0( 346) 1.3610 27.061 1818 2.741 4983 2.012 0.72852 14.720 0.0789   2451 56.415 166.5 0.17 0.00
COMBUSTOR        0   11     4  21
41.500    208.366 2969   702.4( 837) 1.2969 27.060 2660
41.500      8.967 1367   221.0( 359) 1.3584 27.060 1847 2.657 4908 2.018 0.72158 14.720 0.0796   2428 55.039 168.0 0.17 0.00
COMBUSTOR        0   12     5  21
42.460    129.763 2948   695.5( 830) 1.2975 27.060 2651
42.460      4.884 1308   204.7( 342) 1.3618 27.059 1809 2.739 4956 2.050 0.68055 14.720 0.0844   2373 52.413 161.2 0.17 0.00
COMBUSTOR        0   13     6  21
42.732    104.707 3116   693.5( 880) 1.2894 27.251 2707
42.732      5.765 1547   216.2( 407) 1.3466 27.252 1949 2.507 4887 2.079 0.67094 14.720 0.0857   2362 50.958 160.5 0.17 0.21
COMBUSTOR        0   14     7  21
42.797    130.178 2966   693.1( 835) 1.2964 27.088 2657
42.797      5.975 1390   219.1( 365) 1.3568 27.088 1860 2.618 4870 2.052 0.66844 14.720 0.0860   2360 50.591 160.3 0.17 0.03
COMBUSTOR        0   15     8   4
44.310    110.954 3169   682.7( 895) 1.2864 27.349 2722
44.310     17.075 2044   332.6( 551) 1.3244 27.349 2218 1.887 4185 2.078 0.61877 14.720 0.0929   2321 40.246 157.7 0.17 0.31
COMBUSTOR        0   16     9   4
44.800     94.717 3384   679.4( 960) 1.2757 27.606 2788
44.800     20.669 2397   365.0( 653) 1.3091 27.609 2377 1.669 3946 2.102 0.61104 14.720 0.0941   2312 37.660 157.1 0.17 0.58
COMBUSTOR        0   17    10   4
45.517     84.390 3606   674.5(1026) 1.2637 27.886 2850
45.517     25.198 2770   400.6( 764) 1.2933 27.895 2527 1.465 3701 2.120 0.60679 14.720 0.0947   2304 34.903 156.5 0.17 0.87
COMBUSTOR        0   18    11   4
46.222     79.388 3549   673.6(1050) 1.2672 26.707 2893
46.222     26.792 2797   418.0( 804) 1.2937 26.714 2595 1.378 3576 2.196 0.59211 14.773 0.0974   2310 32.905 156.4 0.28 0.55
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READING # 0088 BLOCK # 195 TIME = 294.001 MACH 7.2 PT = 998.749 TT = 3203.3

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	V	A/AP	MOMTH	C	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 2														
46.232	79.361	3549	673.5(1051)	1.2672	26.708	2894											
46.232	26.815	2798	418.1(805)	1.2937	26.714	2596	1.377	3574	2.196	0.59211	14.773	0.0974	2310	32.691	156.4	0.28	0.55
COMBUSTOR	0	20	13 8														
46.250	77.646	3093	687.8(999)	1.2918	23.736	2893											
46.250	26.857	2416	444.0(760)	1.3146	23.737	2579	1.354	3493	2.348	0.59651	14.912	0.0976	2290	32.379	153.6	0.59	0.17
COMBUSTOR	0	21	14 2														
46.260	77.575	3094	687.7(1000)	1.2918	23.738	2893											
46.260	26.880	2418	444.1(760)	1.3145	23.739	2580	1.353	3491	2.348	0.59617	14.912	0.0977	2290	32.344	153.6	0.59	0.17
COMBUSTOR	0	22	15 4														
47.310	70.174	3303	674.2(1071)	1.2811	23.977	2962											
47.310	29.314	2712	457.2(859)	1.3013	23.980	2705	1.218	3295	2.371	0.55266	14.912	0.1053	2318	28.304	155.5	0.59	0.27
COMBUSTOR	0	23	16 4														
48.110	65.124	3496	662.4(1137)	1.2707	24.204	3021											
48.110	29.401	2937	452.8(935)	1.2906	24.209	2790	1.161	3239	2.389	0.50787	14.912	0.1146	2364	25.561	156.6	0.59	0.36
COMBUSTOR	0	24	17 4														
48.757	61.173	3730	653.0(1218)	1.2572	24.475	3086											
48.757	27.250	3144	427.7(1005)	1.2796	24.486	2858	1.175	3357	2.407	0.46102	14.912	0.1263	2438	24.053	163.5	0.59	0.46
COMBUSTOR	0	25	18 6														
50.197	56.852	3414	649.0(1193)	1.2755	22.411	3108											
50.197	16.080	2549	307.8(860)	1.3057	22.415	2717	1.521	4132	2.540	0.37812	15.031	0.1552	2569	24.279	170.9	0.85	0.29
COMBUSTOR	0	26	19 2														
50.207	56.901	3412	649.0(1192)	1.2756	22.409	3107											
50.207	16.003	2543	306.7(858)	1.3059	22.413	2714	1.525	4138	2.540	0.37763	15.031	0.1554	2570	24.285	171.0	0.85	0.29
COMBUSTOR	0	27	20 4														
50.737	64.230	3224	645.3(1122)	1.2850	22.242	3043											
50.737	11.692	2176	242.4(725)	1.3213	22.244	2535	1.771	4490	2.517	0.35318	15.031	0.1662	2604	24.643	173.2	0.85	0.24
COMBUSTOR	0	28	21 4														
52.147	55.237	3452	637.5(1207)	1.2730	22.473	3118											
52.147	10.800	2386	219.7(795)	1.3106	22.478	2630	1.738	4572	2.547	0.30100	15.031	0.1950	2675	21.387	178.0	0.85	0.31
COMBUSTOR	0	29	22 4														
54.247	50.976	3514	625.1(1233)	1.2691	22.489	3140											
54.247	8.175	2325	157.8(777)	1.3116	22.495	2596	1.863	4835	2.563	0.24749	15.078	0.2379	2764	18.598	183.3	0.85	0.34
COMBUSTOR	0	30	23 4														
54.747	47.611	3620	622.9(1273)	1.2620	22.597	3172											
54.747	8.275	2456	159.6(823)	1.3054	22.607	2655	1.813	4815	2.576	0.23737	15.078	0.2480	2782	17.762	184.5	0.85	0.37
COMBUSTOR	0	31	24 4														
55.497	46.359	3652	619.8(1284)	1.2610	22.635	3180											
55.497	7.654	2452	141.7(821)	1.3050	22.646	2650	1.845	4891	2.580	0.22376	15.078	0.2631	2808	17.008	186.2	0.85	0.38
COMBUSTOR	0	32	25 3														
55.760	46.044	3658	618.7(1287)	1.2605	22.643	3182											
55.760	7.436	2445	135.2(818)	1.3052	22.655	2646	1.859	4919	2.581	0.21938	15.078	0.2684	2817	16.771	186.8	0.85	0.38
COMBUSTOR	0	33	26 4														
56.257	41.227	3705	616.8(1304)	1.2573	22.694	3195											
56.257	5.381	2363	82.3(787)	1.3074	22.708	2601	1.989	5172	2.593	0.17311	15.078	0.3401	2893	13.913	191.8	0.85	0.40
COMBUSTOR	0	34	27 4														
57.682	35.585	3956	611.7(1399)	1.2401	22.958	3259											
57.682	5.622	2681	86.0(900)	1.2924	22.990	2737	1.874	5129	2.619	0.16000	15.078	0.3679	2933	12.793	194.5	0.85	0.48
COMBUSTOR	0	35	28 4														
57.737	33.382	4079	611.5(1446)	1.2308	23.086	3288											
57.737	6.109	2883	105.8(974)	1.2832	23.132	2820	1.784	5030	2.631	0.15957	15.078	0.3689	2935	12.475	194.6	0.85	0.53
COMBUSTOR	0	36	29 2														
57.877	33.306	4080	611.1(1446)	1.2307	23.087	3288											
57.877	6.040	2877	103.1(972)	1.2833	23.134	2817	1.790	5042	2.631	0.15843	15.078	0.3716	2938	12.413	194.8	0.85	0.53
COMBUSTOR	0	37	30 10														
57.957	37.228	3900	610.8(1378)	1.2442	22.903	3245											
57.957	5.351	2576	71.0(862)	1.2969	22.930	2692	1.931	5197	2.612	0.16017	15.078	0.3675	2939	12.937	194.9	0.85	0.47

READING = 0088 BLOCK = 195 TIME = 294.001 MACH 7.2 PT = 998.709 TT = 3203.3

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	*	A/AC	WGMTH	Q	IVAC	PHI	ETAC
COMBUSTOR 0 38 31 4																	
58.237	38.861	3844	609.9(1357)	1.2481	22.849	3231											
58.237	5.075	2475	56.7(825)	1.3013	22.871	2646	1.989	5262	2.606	0.15970	15.078	0.3686	2945	13.059	195.3	0.85	0.45
COMBUSTOR 0 39 32 4																	
58.463	42.562	3723	609.3(1311)	1.2561	22.729	3198											
58.463	4.581	2271	33.6(752)	1.3103	22.744	2551	2.104	5367	2.591	0.15934	15.078	0.3695	2949	13.291	195.6	0.85	0.41
COMBUSTOR 0 40 33 6																	
59.187	66.341	3294	607.4(1150)	1.2803	22.323	3065											
59.187	3.000	1573	-40.4(509)	1.3449	22.326	2171	2.623	5693	2.522	0.15687	15.078	0.3753	2957	13.880	196.1	0.85	0.28
COMBUSTOR 0 41 34 7																	
60.207	27.907	4618	604.7(1651)	1.1834	23.682	3387											
60.207	8.290	3783	176.9(1311)	1.2294	23.870	3112	1.487	4627	2.667	0.15587	15.078	0.3777	2967	11.208	196.7	0.85	0.74
COMBUSTOR 0 42 35 4																	
62.217	27.786	4748	599.1(1700)	1.1715	23.841	3406											
62.217	9.412	4041	204.5(1410)	1.2082	24.081	3175	1.400	4446	2.671	0.16130	15.078	0.3650	2962	11.139	196.5	0.85	0.81
COMBUSTOR 0 43 36 4																	
63.637	27.794	4844	594.8(1737)	1.1629	23.957	3419											
63.637	10.450	4235	228.5(1484)	1.1909	24.234	3217	1.331	4281	2.672	0.16567	15.078	0.3553	2958	11.022	196.1	0.85	0.87
COMBUSTOR 0 44 37 4																	
66.101	25.757	4919	585.8(1765)	1.1547	24.063	3426											
66.101	10.688	4404	249.4(1550)	1.1739	24.370	3248	1.263	4103	2.678	0.15704	15.078	0.3749	2949	10.013	195.6	0.85	0.93
COMBUSTOR 0 45 38 4																	
66.477	23.609	4995	584.3(1794)	1.1468	24.149	3434											
66.477	10.672	4561	274.3(1611)	1.1581	24.481	3275	1.203	3939	2.683	0.14599	15.078	0.4032	2948	8.936	195.5	0.85	1.00
COMBUSTOR REGEN 46 39 3																	
66.477	23.609	5101	694.6(1841)	1.1428	23.981	3477											
66.477	11.424	4718	401.4(1678)	1.1494	24.319	3329	1.151	3831	2.705	0.14599	15.078	0.4032	2975	8.691	197.3	0.85	1.00
NOZZLE AE 47 40 5																	
88.713	23.609	4995	584.3(1730)	1.1468	24.149	3434											
88.713	0.742	2937	-531.7(964)	1.2591	24.887	2718	2.749	7473	2.683	0.03039	15.078	1.9371	3870	3.529	256.7	0.85	1.00
NOZZLE PO 48 41 5																	
88.713	23.609	4995	584.3(1730)	1.1468	24.149	3434											
88.713	0.154	2090	-845.1(654)	1.2925	24.892	2323	3.641	8457	2.683	0.01003	15.078	5.8667	4195	1.319	278.2	0.85	1.00
NOZZLE AE REGEN 49 42 5																	
88.713	23.609	5101	694.6(1841)	1.1428	23.981	3477											
88.713	0.781	3136	-452.8(1040)	1.2486	24.881	2797	2.709	7577	2.705	0.03039	15.078	1.9371	3939	3.579	261.2	0.85	1.00
NOZZLE PO REGEN 50 43 5																	
88.713	23.609	5101	694.6(1841)	1.1428	23.981	3477											
88.713	0.154	2222	-798.0(701)	1.2870	24.892	2390	3.616	8642	2.705	0.00964	15.078	6.1050	4291	1.295	284.6	0.85	1.00
FICTIVE COMBUSTR 69 62 0																	
66.477	325.678	5293	584.3(1911)	1.1722	24.484	3549											
66.477	0.154	1092	-1179.2(323)	1.3481	24.902	1714	5.480	9394	2.468	0.02134	15.078	2.7587	4511	3.115	299.2	0.85	1.00
FICTIVE NOZZLE 70 63 0																	
88.713	10.704	4871	560.7(1745)	1.1408	24.072	3388											
88.713	1.095	3642	-230.4(1238)	1.2078	24.821	2968	2.120	6292	2.743	0.03039	15.078	1.9371	3492	2.972	231.6	0.85	1.00

ORIGINAL PAGE IS OF POOR QUALITY

XABS	P-IA	P-OA	POA	QOX	G-IP	C-OP	CANALI	P-TF/PSO	P-IF/PTO	P-OH/PSO	P-CR/PTO
6.981E-01	6.900E-01	0.000	-2.729E-01	0.000	0.000	0.000	2.476E-02	4.483E 00	6.909E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.483E 00	6.909E-04	0.000	0.000
3.070E 01	1.025E 00	0.000	-9.248E 01	0.000	0.000	0.000	5.053E 02	6.659E 00	1.026E-03	0.000	0.000
3.508E 01	1.889E 00	0.000	-1.869E 02	0.000	0.000	0.000	6.804E 02	1.227E 01	1.891E-03	0.000	0.000
3.599E 01	2.170E 00	0.000	-2.054E 02	0.000	0.000	0.000	7.013E 02	1.410E 01	2.173E-03	0.000	0.000
3.606E 01	2.060E 00	0.000	-2.269E 02	-1.838E 02	-1.838E 02	0.000	7.246E 02	1.338E 01	2.063E-03	0.000	0.000
3.648E 01	2.269E 00	0.000	-2.454E 02	-1.883E 02	-1.883E 02	0.000	7.443E 02	1.474E 01	2.272E-03	0.000	0.000
3.661E 01	2.302E 00	3.244E 00	-2.853E 02	-1.897E 02	-1.897E 02	0.000	7.507E 02	1.496E 01	2.305E-03	2.107E 01	3.248E-03
3.662E 01	2.304E 00	3.259E 00	-2.853E 02	-1.898E 02	-1.898E 02	0.000	7.509E 02	1.497E 01	2.307E-03	2.117E 01	3.263E-03
3.701E 01	2.400E 00	4.262E 00	-2.879E 02	-1.941E 02	-1.941E 02	0.000	7.913E 02	1.559E 01	2.403E-03	2.769E 01	4.267E-03
3.729E 01	2.294E 00	4.975E 00	-2.873E 02	-1.973E 02	-1.973E 02	0.000	8.204E 02	1.490E 01	2.297E-03	3.232E 01	4.981E-03
3.803E 01	2.010E 00	8.296E 00	-2.710E 02	-2.064E 02	-2.064E 02	0.000	9.004E 02	1.306E 01	2.013E-03	5.389E 01	8.306E-03
3.875E 01	6.655E 00	1.150E 01	-2.690E 02	-2.882E 02	-2.174E 02	-7.084E 01	9.802E 02	4.324E 01	6.664E-03	7.471E 01	1.151E-02
3.875E 01	6.675E 00	1.149E 01	-2.690E 02	-2.885E 02	-2.175E 02	-7.104E 01	9.806E 02	4.337E 01	6.684E-03	7.464E 01	1.150E-02
3.901E 01	8.360E 00	1.064E 01	-2.736E 02	-3.105E 02	-2.224E 02	-8.806E 01	1.010E 03	5.431E 01	8.370E-03	6.914E 01	1.066E-02
3.950E 01	1.135E 01	9.045E 00	-2.910E 02	-3.534E 02	-2.334E 02	-1.200E 02	1.066E 03	7.377E 01	1.137E-02	5.876E 01	9.056E-03
3.977E 01	1.098E 01	8.175E 00	-3.010E 02	-3.777E 02	-2.404E 02	-1.374E 02	1.097E 03	7.131E 01	1.099E-02	5.311E 01	8.185E-03
4.000E 01	1.065E 01	7.846E 00	-3.070E 02	-3.995E 02	-2.470E 02	-1.525E 02	1.124E 03	6.917E 01	1.066E-02	5.097E 01	7.856E-03
4.024E 01	1.148E 01	7.512E 00	-3.140E 02	-4.221E 02	-2.543E 02	-1.678E 02	1.151E 03	7.456E 01	1.149E-02	4.880E 01	7.522E-03
4.040E 01	1.205E 01	8.570E 00	-3.185E 02	-4.378E 02	-2.595E 02	-1.783E 02	1.170E 03	7.831E 01	1.207E-02	5.567E 01	8.580E-03
4.041E 01	1.209E 01	8.634E 00	-3.186E 02	-4.387E 02	-2.598E 02	-1.790E 02	1.172E 03	7.854E 01	1.210E-02	5.609E 01	8.645E-03
4.079E 01	1.328E 01	1.082E 01	-3.255E 02	-4.716E 02	-2.709E 02	-2.006E 02	1.211E 03	8.624E 01	1.329E-02	7.028E 01	1.083E-02
4.124E 01	1.500E 01	1.937E 00	-3.457E 02	-5.201E 02	-2.884E 02	-2.317E 02	1.269E 03	9.744E 01	1.502E-02	1.259E 01	1.940E-03
4.150E 01	1.592E 01	2.009E 00	-3.639E 02	-5.465E 02	-2.985E 02	-2.480E 02	1.300E 03	1.035E 02	1.594E-02	1.305E 01	2.011E-03
4.246E 01	7.500E 00	2.268E 00	-4.038E 02	-6.473E 02	-3.408E 02	-3.065E 02	1.414E 03	4.872E 01	7.509E-03	1.474E 01	2.271E-03
4.273E 01	9.188E 00	2.342E 00	-4.099E 02	-6.764E 02	-3.545E 02	-3.220E 02	1.446E 03	5.969E 01	9.199E-03	1.521E 01	2.345E-03
4.280E 01	9.592E 00	2.359E 00	-4.116E 02	-6.833E 02	-3.579E 02	-3.254E 02	1.454E 03	6.231E 01	9.604E-03	1.533E 01	2.362E-03
4.431E 01	1.898E 01	1.517E 01	-4.274E 02	-8.361E 02	-4.500E 02	-3.861E 02	1.636E 03	1.233E 02	1.901E-02	9.853E 01	1.519E-02
4.480E 01	2.202E 01	1.931E 01	-4.295E 02	-8.851E 02	-4.852E 02	-3.999E 02	1.696E 03	1.431E 02	2.205E-02	1.255E 02	1.934E-02
4.552E 01	2.493E 01	2.538E 01	-4.286E 02	-9.578E 02	-5.376E 02	-4.201E 02	1.783E 03	1.620E 02	2.497E-02	1.649E 02	2.541E-02
4.622E 01	2.780E 01	2.579E 01	-4.124E 02	-1.049E 03	-5.873E 02	-4.612E 02	1.870E 03	1.806E 02	2.783E-02	1.675E 02	2.582E-02
4.623E 01	2.784E 01	2.579E 01	-4.124E 02	-1.050E 03	-5.880E 02	-4.621E 02	1.871E 03	1.808E 02	2.787E-02	1.676E 02	2.583E-02
4.625E 01	2.791E 01	2.580E 01	-4.112E 02	-1.053E 03	-5.892E 02	-4.638E 02	1.873E 03	1.813E 02	2.795E-02	1.676E 02	2.584E-02
4.626E 01	2.795E 01	2.581E 01	-4.109E 02	-1.055E 03	-5.899E 02	-4.647E 02	1.874E 03	1.816E 02	2.799E-02	1.677E 02	2.584E-02
4.731E 01	3.221E 01	2.642E 01	-3.706E 02	-1.255E 03	-6.605E 02	-5.948E 02	2.004E 03	2.093E 02	3.225E-02	1.716E 02	2.645E-02
4.811E 01	3.192E 01	2.688E 01	-3.161E 02	-1.431E 03	-7.116E 02	-7.198E 02	2.103E 03	2.074E 02	3.196E-02	1.746E 02	2.691E-02
4.876E 01	2.725E 01	2.725E 01	-2.365E 02	-1.573E 03	-7.513E 02	-8.213E 02	2.184E 03	1.770E 02	2.728E-02	1.770E 02	2.728E-02
5.020E 01	1.608E 01	1.608E 01	-7.563E 01	-1.817E 03	-8.345E 02	-9.820E 02	2.363E 03	1.045E 02	1.610E-02	1.045E 02	1.610E-02
5.021E 01	1.600E 01	1.600E 01	-7.479E 01	-1.818E 03	-8.351E 02	-9.826E 02	2.365E 03	1.040E 02	1.602E-02	1.040E 02	1.602E-02
5.074E 01	1.189E 01	1.189E 01	-3.626E 01	-1.872E 03	-8.639E 02	-1.009E 03	2.431E 03	7.725E 01	1.191E-02	7.725E 01	1.191E-02
5.215E 01	1.080E 01	1.080E 01	4.762E 01	-1.990E 03	-9.357E 02	-1.054E 03	2.609E 03	7.016E 01	1.081E-02	7.016E 01	1.081E-02
5.425E 01	8.175E 00	8.175E 00	1.521E 02	-2.146E 03	-1.030E 03	-1.116E 03	2.875E 03	5.311E 01	8.185E-03	5.311E 01	8.185E-03
5.475E 01	8.275E 00	8.275E 00	1.735E 02	-2.179E 03	-1.050E 03	-1.129E 03	2.939E 03	5.376E 01	8.285E-03	5.376E 01	8.285E-03
5.550E 01	7.654E 00	7.654E 00	2.043E 02	-2.226E 03	-1.079E 03	-1.147E 03	3.035E 03	4.972E 01	7.664E-03	4.972E 01	7.664E-03
5.576E 01	7.436E 00	7.436E 00	2.145E 02	-2.242E 03	-1.088E 03	-1.153E 03	3.068E 03	4.831E 01	7.446E-03	4.831E 01	7.446E-03
5.626E 01	3.737E 00	7.029E 00	2.921E 02	-2.271E 03	-1.106E 03	-1.165E 03	3.102E 03	2.428E 01	3.742E-03	4.564E 01	7.034E-03
5.768E 01	5.622E 00	5.622E 00	3.371E 02	-2.348E 03	-1.152E 03	-1.196E 03	3.209E 03	3.652E 01	5.629E-03	3.652E 01	5.629E-03
5.774E 01	6.650E 00	5.567E 00	3.387E 02	-2.351E 03	-1.154E 03	-1.197E 03	3.217E 03	4.320E 01	6.658E-03	3.617E 01	5.574E-03
5.788E 01	6.650E 00	5.430E 00	3.423E 02	-2.356E 03	-1.158E 03	-1.200E 03	3.234E 03	4.320E 01	6.658E-03	3.527E 01	5.436E-03
5.796E 01	5.351E 00	5.351E 00	3.444E 02	-2.362E 03	-1.160E 03	-1.201E 03	3.249E 03	3.476E 01	5.357E-03	3.476E 01	5.357E-03
5.824E 01	5.075E 00	5.075E 00	3.512E 02	-2.374E 03	-1.168E 03	-1.206E 03	3.280E 03	3.297E 01	5.081E-03	3.297E 01	5.081E-03
5.846E 01	4.581E 00	4.581E 00	3.559E 02	-2.384E 03	-1.175E 03	-1.210E 03	3.309E 03	2.976E 01	4.587E-03	2.976E 01	4.587E-03
5.919E 01	3.000E 00	3.000E 00	3.662E 02	-2.413E 03	-1.193E 03	-1.220E 03	3.402E 03	1.949E 01	3.004E-03	1.949E 01	3.004E-03
6.021E 01	8.250E 00	8.250E 00	3.792E 02	-2.453E 03	-1.216E 03	-1.237E 03	3.532E 03	5.360E 01	8.260E-03	5.360E 01	8.260E-03
6.222E 01	9.412E 00	9.412E 00	3.813E 02	-2.538E 03	-1.254E 03	-1.285E 03	3.790E 03	6.115E 01	9.424E-03	6.115E 01	9.424E-03
6.364E 01	1.045E 01	1.045E 01	3.813E 02	-2.605E 03	-1.277E 03	-1.326E 03	3.972E 03	6.789E 01	1.046E-02	6.789E 01	1.046E-02

XABS	P-IR	P-OB	PDA	DQX	Q-IR	Q-OB	CAVALL	P-IR/PSO	P-IR/PTO	P-OB/PSO	P-OB/PTO
6.610E 01	1.069E 01	1.069E 01	3.813E 02	-2.739E 03	-1.321E 03	-1.417E 03	4.289E 03	6.943E 01	1.070E-02	6.943E 01	1.070E-02
6.648E 01	1.062E 01	1.072E 01	3.813E 02	-2.762E 03	-1.328E 03	-1.434E 03	4.337E 03	6.899E 01	1.063E-02	6.967E 01	1.074E-02
6.652E 01	1.062E 01	1.073E 01	3.813E 02	-2.764E 03	-1.329E 03	-1.435E 03	4.342E 03	6.899E 01	1.063E-02	6.970E 01	1.074E-02
6.672E 01	1.007E 01	1.075E 01	3.813E 02	-2.777E 03	-1.333E 03	-1.444E 03	4.368E 03	6.543E 01	1.008E-02	6.982E 01	1.076E-02
6.838E 01	5.520E 00	4.910E 00	4.683E 02	-2.864E 03	-1.359E 03	-1.506E 03	4.584E 03	3.586E 01	5.527E-03	3.190E 01	4.916E-03
6.905E 01	4.038E 00	4.785E 00	5.657E 02	-2.895E 03	-1.366E 03	-1.529E 03	4.665E 03	2.623E 01	4.043E-03	3.109E 01	4.791E-03
6.982E 01	2.335E 00	2.901E 00	6.623E 02	-2.929E 03	-1.374E 03	-1.555E 03	4.760E 03	1.517E 01	2.338E-03	1.885E 01	2.905E-03
7.054E 01	1.848E 00	1.140E 00	7.163E 02	-2.959E 03	-1.379E 03	-1.579E 03	4.848E 03	1.200E 01	1.850E-03	7.406E 00	1.141E-03
7.115E 01	1.435E 00	1.119E 00	7.474E 02	-2.981E 03	-1.383E 03	-1.597E 03	4.922E 03	9.322E 00	1.437E-03	7.271E 00	1.121E-03
7.253E 01	8.300E-01	1.072E 00	7.993E 02	-3.015E 03	-1.390E 03	-1.625E 03	5.088E 03	5.392E 00	8.310E-04	6.965E 00	1.074E-03
7.406E 01	4.885E-01	1.020E 00	8.390E 02	-3.044E 03	-1.396E 03	-1.648E 03	5.273E 03	3.173E 00	4.891E-04	6.626E 00	1.021E-03
7.421E 01	4.550E-01	8.867E-01	8.419E 02	-3.047E 03	-1.396E 03	-1.650E 03	5.290E 03	2.956E 00	4.556E-04	5.760E 00	8.878E-04
7.496E 01	5.109E-01	2.200E-01	8.598E 02	-3.063E 03	-1.398E 03	-1.665E 03	5.374E 03	3.319E 00	5.115E-04	1.429E 00	2.203E-04
7.496E 01	5.112E-01	2.164E-01	8.603E 02	-3.063E 03	-1.398E 03	-1.665E 03	5.375E 03	3.321E 00	5.118E-04	1.406E 00	2.167E-04
7.629E 01	6.100E-01	0.000	8.721E 02	-3.097E 03	-1.402E 03	-1.695E 03	5.426E 03	3.963E 00	6.108E-04	0.000	0.000
7.914E 01	7.700E-01	0.000	8.997E 02	-3.102E 03	-1.407E 03	-1.695E 03	5.525E 03	5.002E 00	7.710E-04	0.000	0.000
8.304E 01	5.100E-01	0.000	9.271E 02	-3.107E 03	-1.411E 03	-1.695E 03	5.630E 03	3.313E 00	5.106E-04	0.000	0.000
8.589E 01	4.650E-01	0.000	9.379E 02	-3.110E 03	-1.415E 03	-1.695E 03	5.684E 03	3.021E 00	4.656E-04	0.000	0.000
8.871E 01	6.400E-01	0.000	9.512E 02	-3.117E 03	-1.421E 03	-1.695E 03	5.707E 03	4.158E 00	6.408E-04	0.000	0.000
8.871E 01	6.404E-01	0.000	9.512E 02	-3.117E 03	-1.421E 03	-1.695E 03	5.707E 03	4.160E 00	6.412E-04	0.000	0.000

READING = 0088 BLOCK = 195 TIME = 294.001 MACH 7.2 PT = 998.749 TT = 3203.3

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.476E 01	8.476E 01	2.267E-03	3.425E-02
4.041E 01	1.672E-01	8.493E 01	2.754E-03	3.272E-02
4.075E 01	9.766E 00	9.070E 01	2.442E-03	3.924E-02
4.124E 01	7.853E 00	9.855E 01	2.417E-03	3.037E-02
4.150E 01	4.217E 00	1.028E 02	2.456E-03	3.138E-02
4.246E 01	1.555E 01	1.183E 02	2.619E-03	1.922E-02
4.273E 01	4.381E 00	1.227E 02	2.608E-03	2.167E-02
4.280E 01	1.072E 00	1.238E 02	2.806E-03	2.136E-02
4.431E 01	2.284E 01	1.466E 02	2.712E-03	4.478E-02
4.480E 01	6.537E 00	1.532E 02	2.922E-03	4.732E-02
4.552E 01	9.555E 00	1.627E 02	3.101E-03	5.009E-02
4.622E 01	9.445E 00	1.722E 02	3.350E-03	4.827E-02
4.623E 01	1.341E-01	1.723E 02	3.249E-03	5.000E-02
4.625E 01	2.430E-01	1.725E 02	3.571E-03	4.758E-02
4.626E 01	1.364E-01	1.727E 02	3.161E-03	5.472E-02
4.731E 01	1.238E 01	1.850E 02	3.144E-03	5.531E-02
4.811E 01	8.513E 00	1.936E 02	3.235E-03	5.190E-02
4.876E 01	6.490E 00	2.001E 02	3.266E-03	4.798E-02
5.020E 01	1.457E 01	2.146E 02	3.436E-03	3.423E-02
5.021E 01	1.002E-01	2.147E 02	3.149E-03	3.736E-02
5.074E 01	9.070E 00	2.198E 02	3.085E-03	3.130E-02
5.216E 01	1.221E 01	2.320E 02	2.892E-03	2.972E-02
5.425E 01	1.553E 01	2.475E 02	2.941E-03	2.313E-02
5.475E 01	3.426E 00	2.510E 02	2.973E-03	2.284E-02
5.550E 01	4.980E 00	2.559E 02	3.006E-03	2.115E-02
5.576E 01	1.713E 00	2.577E 02	3.018E-03	2.057E-02
5.626E 01	1.524E 00	2.592E 02	2.911E-03	1.581E-02
5.768E 01	4.179E 00	2.634E 02	2.911E-03	1.596E-02
5.774E 01	2.661E-01	2.636E 02	3.077E-03	1.608E-02
5.788E 01	6.878E-01	2.643E 02	3.143E-03	1.565E-02
5.796E 01	4.457E-01	2.648E 02	3.728E-03	1.268E-02
5.824E 01	1.559E 00	2.663E 02	2.999E-03	1.446E-02
5.846E 01	1.129E 00	2.674E 02	2.947E-03	1.364E-02
5.919E 01	3.636E 00	2.711E 02	2.831E-03	1.033E-02
6.021E 01	4.570E 00	2.756E 02	2.744E-03	2.114E-02
6.222E 01	8.870E 00	2.845E 02	3.413E-03	1.850E-02
6.364E 01	6.957E 00	2.915E 02	3.479E-03	1.920E-02
6.610E 01	1.171E 01	3.032E 02	3.564E-03	1.864E-02
6.648E 01	1.650E 00	3.048E 02	3.656E-03	1.776E-02
6.652E 01	1.699E-01	3.050E 02	3.750E-03	1.785E-02
6.672E 01	8.627E-01	3.059E 02	3.745E-03	1.770E-02
6.838E 01	7.117E 00	3.130E 02	3.669E-03	1.257E-02
6.905E 01	2.565E 00	3.155E 02	3.650E-03	1.133E-02
6.982E 01	2.610E 00	3.182E 02	3.592E-03	8.011E-03
7.054E 01	1.881E 00	3.200E 02	3.514E-03	5.353E-03
7.115E 01	1.296E 00	3.213E 02	3.490E-03	4.763E-03
7.253E 01	2.555E 00	3.239E 02	3.442E-03	3.808E-03
7.406E 01	2.407E 00	3.263E 02	3.401E-03	3.184E-03
7.421E 01	2.016E-01	3.265E 02	3.385E-03	2.909E-03
7.496E 01	7.950E-01	3.273E 02	3.302E-03	1.813E-03
7.496E 01	1.228E-03	3.273E 02	3.301E-03	1.806E-03
7.629E 01	4.696E-01	3.278E 02	3.360E-03	2.693E-03
7.914E 01	1.116E 00	3.289E 02	3.373E-03	3.203E-03
8.304E 01	1.125E 00	3.300E 02	3.297E-03	2.315E-03
8.585E 01	4.919E-01	3.305E 02	3.269E-03	2.144E-03
8.871E 01	2.198E-01	3.307E 02	3.296E-03	2.733E-03

READING = 0088 BLOCK = 195 TIME = 294.001 MACH 7.2 PT = 998.749 TT = 3203.3

X	DDRAG	CDRAG	CF	HC
8.871E 01	0.000	3.307E 02	3.296E-03	2.734E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	597.	(LBF)
MEASURED THRUST	751.	(LBF)
CALCULATED SPECIFIC IMPULSE	1519.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	1909.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.4133	
MEASURED THRUST COEFFICIENT	0.5197	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	3554.	(LBF)
NET THRUST	659.	(LBF)
SPECIFIC IMPULSE	1676.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.4561	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.8	(LBF)
INLET MOMENTUM CHANGE	-403.2	(LBF)
COMBUSTOR FRICTION DRAG	220.1	(LBF)
COMBUSTOR STRUT DRAG	-11.91	(LBF)
COMBUSTOR MOMENTUM CHANGE	456.	(LBF)
NOZZLE FRICTION DRAG	25.89	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	544.	(LBF)
NOZZLE PRESSURE INTEGRAL	970.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-722.	(LBF)
TOTAL STRUT DRAG	-11.91	(LBF)
CAVITY FORCE	-516.	(LBF)
CALCULATED LOAD CELL FORCE	-641.	(LBF)
MEASURED LOAD CELL FORCE	-487.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0, -150.6, -121.0,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7369	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.621	(IN)
NOZZLE SHROUD TRAILING EDGE	74.961	(IN)
NOZZLE PLUG TRAILING EDGE	88.713	(IN)
STRUT LEADING EDGE	57.877	(IN)
STRUT TRAILING EDGE	66.477	(IN)
COMBUSTOR EXIT	66.477	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9883	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1007	
DELTA PT2	0.0886	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3261	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1020	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9042	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9128	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9311	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8813	
ENTHALPY AT PO - SUPERSONIC	-29.83	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	9.32	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0268
EQUIVALENCE RATIO	0.854
COMBUSTOR EFFICIENCY	0.997
TOTAL PRESSURE RATIO	0.0728
COMBUSTOR EFFECTIVENESS	0.8428
INJECTOR DISCHARGE COEFFICIENTS	0.9279, 0.5606, 0.9583, 0.7788

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9023
NOZZLE COEFFICIENT - CT	0.8143
PROCESS EFFICIENCY	0.7099
KINETIC ENERGY EFFICIENCY	0.7750

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.722	
1C	44.300	
2A	50.197	D
2C	46.250	E
3A	55.487	
3B	57.672	
4	46.222	C

Reading 88

t = 299.40 sec.

2/12/75

READING = 0088 BLOCK = 201 TIME = 299.001 MACH 7.2 PT = 998.999 TT = 3150.9

RAMJET PERFORMANCE

S U M M A R Y R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	F	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6														
0.000	998.999	3151	716.3(840)	1.2886	28.903	2643											
0.000	0.154	306	-55.7(73)	1.3966	28.901	857	7.250	6215	1.823	0.05864	14.855	0.0891	2909	5.663	195.8		
SPIKE TIP NS		2	0 7														
0.600	11.312	3151	716.3(840)	1.2881	28.901	2642											
0.600	10.439	3094	699.0(823)	1.2899	28.901	2620	0.355	929	2.131	0.05864	14.855	0.0891	3074	0.847	206.9		
WIND TUNNEL		3	0 0														
0.000	998.999	3151	716.3(840)	1.2886	28.903	2643											
0.000	0.170	314	-53.7(75)	1.3969	28.901	869	7.144	6207	1.823	0.06263	15.869	0.0891	3104	6.042	195.6		
SPIKE TIP NS		4	0 0														
0.600	11.312	3151	716.3(840)	1.2881	28.901	2642											
0.600	10.301	3085	696.2(821)	1.2902	28.901	2617	0.383	1003	2.131	0.06263	15.869	0.0891	3104	0.976	195.6		
INLET THROAT		5	0 3														
40.400	326.253	3055	687.1(812)	1.2916	28.902	2605											
40.400	10.438	1314	193.5(323)	1.3594	28.901	1753	2.835	4970	1.890	0.73853	14.855	0.0785	2505	57.040	168.6		
INLET UPNRSK		6	0 3														
40.400	326.253	3055	687.1(812)	1.2916	28.902	2605											
40.400	9.007	1263	180.4(309)	1.3625	28.901	1721	2.926	5035	1.890	0.67139	14.855	0.0864	2524	52.537	169.9		
INLET DNNRSK		7	0 4														
40.400	102.332	3055	687.1(812)	1.2915	28.902	2605											
40.400	89.210	2962	658.7(784)	1.2944	28.902	2568	0.464	1192	1.970	0.67139	14.858	0.0864	2524	12.435	169.9		
COMBUSTOR	0	8	1 21														
40.410	220.510	2988	698.3(865)	1.2960	26.369	2702											
40.410	11.346	1443	219.9(390)	1.3542	26.369	1919	2.549	4893	2.061	0.74401	14.967	0.0785	2504	56.570	167.3	0.24	0.07
COMBUSTOR	0	9	2 3														
40.747	212.005	2998	696.2(868)	1.2954	26.386	2705											
40.747	14.363	1556	247.5(423)	1.3480	26.386	1988	2.383	4738	2.064	0.74675	14.967	0.0783	2492	54.990	166.5	0.24	0.09
COMBUSTOR	0	10	3 21														
41.237	208.454	2897	693.1(837)	1.2999	26.290	2669											
41.237	9.997	1365	221.8(368)	1.3593	26.290	1873	2.592	4857	2.056	0.74078	14.967	0.0789	2461	55.909	164.4	0.24	0.01
COMBUSTOR	0	11	4 21														
41.500	193.841	2879	691.4(831)	1.3008	26.276	2662											
41.500	10.816	1410	239.0(381)	1.3569	26.275	1903	2.501	4758	2.060	0.73373	14.967	0.0796	2434	54.257	162.6	0.24	0.00
COMBUSTOR	0	12	5 21														
42.460	111.629	2856	684.8(824)	1.3015	26.273	2652											
42.460	4.888	1311	211.2(353)	1.3626	26.273	1838	2.648	4868	2.099	0.69201	14.967	0.0844	2370	52.351	158.4	0.24	0.00
COMBUSTOR	0	13	6 21														
42.732	123.767	2890	682.7(822)	1.3018	26.273	2649											
42.732	6.560	1375	229.7(371)	1.3589	26.273	1880	2.532	4761	2.090	0.68223	14.967	0.0857	2359	50.481	157.6	0.24	0.00
COMBUSTOR	0	14	7 21														
42.797	79.045	3235	682.2(940)	1.2834	26.688	2781											
42.797	6.960	1823	234.3(498)	1.3326	26.690	2127	2.226	4734	2.155	0.67970	14.967	0.0860	2356	50.009	157.4	0.24	0.32
COMBUSTOR	0	15	8 4														
44.310	87.030	3315	669.8(964)	1.2790	26.819	2804											
44.310	24.453	2486	398.4(699)	1.3070	26.822	2454	1.502	3685	2.151	0.62919	14.967	0.0929	2296	36.035	153.4	0.24	0.42
COMBUSTOR	0	16	9 4														
44.800	78.485	3484	665.2(1016)	1.2701	27.025	2853											
44.800	30.117	2822	443.8(802)	1.2932	27.030	2591	1.285	3329	2.168	0.62133	14.967	0.0941	2274	32.141	151.9	0.24	0.57
COMBUSTOR	0	17	10 3														
45.517	75.317	3513	658.4(1024)	1.2683	27.082	2860											
45.517	33.414	2943	466.3(840)	1.2884	27.087	2638	1.175	3100	2.171	0.61700	14.967	0.0947	2253	29.730	150.5	0.24	0.62
COMBUSTOR	0	18	11 5														
46.222	73.592	3234	660.3(1004)	1.2834	24.982	2874											
46.222	31.944	2677	464.6(813)	1.3023	24.984	2634	1.188	3130	2.282	0.60375	15.064	0.0974	2262	29.365	150.2	0.45	0.28

READING = 0088 BLOCK = 201 TIME = 299.801 MACH 7.2 PT = 998.999 TT = 3150.9

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	K	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 0														
46.232	73.591	3234	660.2(1004)	1.2834	24.982	2874											
46.232	31.923	2676	464.3(813)	1.3023	24.984	2634	1.189	3131	2.282	0.60375	15.064	0.0974	2262	29.374	150.2	0.45	0.28
COMBUSTOR	0	20	13 6														
46.250	72.598	2891	671.9(961)	1.3011	22.804	2864											
46.250	31.885	2380	483.4(775)	1.3183	22.805	2615	1.174	3071	2.399	0.60720	15.180	0.0976	2246	28.978	148.0	0.70	0.12
COMBUSTOR	0	21	14 2														
46.260	72.567	2892	671.8(961)	1.3011	22.805	2864											
46.260	31.864	2380	483.2(775)	1.3183	22.805	2615	1.174	3072	2.399	0.60686	15.180	0.0977	2246	28.968	148.0	0.70	0.12
COMBUSTOR	0	22	15 4														
47.310	68.718	3002	656.0(999)	1.2954	22.944	2903											
47.310	29.675	2468	457.6(804)	1.3134	22.945	2650	1.189	3151	2.412	0.56257	15.180	0.1053	2287	27.546	150.7	0.70	0.17
COMBUSTOR	0	23	16 4														
48.110	64.772	3154	642.6(1053)	1.2877	23.119	2955											
48.110	27.760	2598	433.7(848)	1.3066	23.121	2702	1.197	3233	2.429	0.51698	15.180	0.1146	2341	25.977	154.2	0.70	0.23
COMBUSTOR	0	24	17 4														
48.757	61.035	3342	632.0(1119)	1.2780	23.326	3017											
48.757	25.175	2741	403.1(896)	1.2989	23.329	2754	1.229	3384	2.447	0.46928	15.180	0.1263	2411	24.680	158.8	0.70	0.30
COMBUSTOR	0	25	18 5														
50.197	58.351	3149	623.0(1111)	1.2881	21.865	3037											
50.197	15.575	2316	297.0(790)	1.3167	21.867	2633	1.534	4039	2.550	0.38426	15.275	0.1552	2537	24.118	166.1	0.91	0.23
COMBUSTOR	0	26	19 2														
50.207	58.384	3147	622.9(1110)	1.2882	21.864	3036											
50.207	15.508	2312	296.0(788)	1.3168	21.866	2631	1.537	4044	2.550	0.38376	15.275	0.1554	2537	24.119	166.1	0.91	0.23
COMBUSTOR	0	27	20 4														
50.737	62.186	3016	618.5(1061)	1.2943	21.758	2987											
50.737	11.975	2039	241.9(688)	1.3284	21.759	2488	1.745	4341	2.532	0.35891	15.275	0.1662	2570	24.210	168.3	0.91	0.19
COMBUSTOR	0	28	21 4														
52.147	53.636	3232	608.6(1141)	1.2835	21.972	3064											
52.147	10.880	2232	217.2(756)	1.3183	21.975	2580	1.715	4426	2.563	0.30589	15.275	0.1950	2643	21.039	173.6	0.91	0.26
COMBUSTOR	0	29	22 3														
54.247	52.301	3203	593.6(1133)	1.2844	21.913	3055											
54.247	7.600	2040	141.0(687)	1.3255	21.915	2477	1.922	4759	2.568	0.25149	15.322	0.2379	2730	18.600	178.1	0.91	0.26
COMBUSTOR	0	30	23 4														
54.747	47.321	3344	590.9(1186)	1.2772	22.047	3103											
54.747	8.000	2224	149.5(753)	1.3166	22.051	2570	1.829	4700	2.588	0.24121	15.322	0.2480	2746	17.618	179.2	0.91	0.30
COMBUSTOR	0	31	24 3														
55.497	48.087	3306	587.2(1172)	1.2790	22.020	3090											
55.497	6.994	2117	121.3(713)	1.3210	22.024	2513	1.922	4828	2.583	0.22738	15.322	0.2631	2771	17.061	180.8	0.91	0.29
COMBUSTOR	0	32	25 3														
55.760	48.669	3284	585.9(1164)	1.2801	22.004	3082											
55.760	6.641	2068	111.0(696)	1.3231	22.007	2487	1.961	4875	2.580	0.22293	15.322	0.2684	2778	16.889	181.3	0.91	0.29
COMBUSTOR	0	33	26 4														
56.257	43.188	3354	583.6(1190)	1.2763	22.073	3105											
56.257	4.897	2027	64.6(679)	1.3239	22.077	2458	2.073	5096	2.596	0.17591	15.322	0.3401	2853	13.930	186.2	0.91	0.31
COMBUSTOR	0	34	27 6														
57.682	26.727	4373	577.3(1581)	1.2037	23.103	3366											
57.682	9.070	3603	207.7(1265)	1.2454	23.203	3101	1.387	4301	2.694	0.16258	15.322	0.3679	2903	10.867	189.5	0.91	0.63
COMBUSTOR	0	35	28 4														
57.737	27.195	4310	577.1(1556)	1.2094	23.036	3354											
57.737	8.582	3483	190.6(1219)	1.2529	23.123	3063	1.436	4398	2.690	0.16216	15.322	0.3689	2905	11.083	189.6	0.91	0.61
COMBUSTOR	0	36	29 4														
57.877	26.837	4355	576.6(1574)	1.2053	23.087	3362											
57.877	8.734	3554	195.5(1246)	1.2483	23.183	3084	1.416	4367	2.692	0.16099	15.322	0.3716	2911	10.925	190.0	0.91	0.63
COMBUSTOR	0	37	30 5														
57.957	26.402	4479	576.2(1622)	1.1940	23.220	3384											
57.957	9.667	3775	222.4(1332)	1.2331	23.346	3149	1.336	4208	2.699	0.16276	15.322	0.3675	2914	10.644	190.2	0.91	0.68

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	F/A	*	A/AC	PUMIM	Q	IVAC	PHT	ETAC
COMBUSTOR	0	38	31 4														
58.237	26.035	4585	575.2(1663)	1.1842	23.336	3401											
58.237	10.275	3951	238.4(1400)	1.2191	23.492	3193	1.286	4195	2.703	0.16228	15.322	0.3686	2925	10.352	190.9	0.91	0.72
COMBUSTOR	0	39	32 2														
58.463	26.203	4584	574.3(1663)	1.1843	23.338	3401											
58.463	10.067	3931	228.6(1392)	1.2204	23.496	3186	1.305	4159	2.703	0.16192	15.322	0.3695	2933	10.468	191.4	0.91	0.72
COMBUSTOR	0	40	33 3														
59.187	26.478	4570	571.5(1657)	1.1857	23.330	3398											
59.187	9.400	3860	201.0(1363)	1.2252	23.489	3164	1.361	4306	2.701	0.15941	15.322	0.3753	2954	10.668	192.8	0.91	0.72
COMBUSTOR	0	41	34 5														
60.207	25.135	4902	567.8(1786)	1.1545	23.699	3446											
60.207	12.075	4477	281.1(1605)	1.1698	23.960	3296	1.149	3787	2.713	0.15839	15.322	0.3777	2972	9.323	194.0	0.91	0.90
COMBUSTOR	0	42	35 4														
62.217	25.696	4930	560.2(1797)	1.1523	23.747	3449											
62.217	13.537	4565	306.9(1641)	1.1635	23.991	3318	1.073	3560	2.710	0.16391	15.322	0.3650	2961	9.068	193.2	0.91	0.92
COMBUSTOR	0	43	36 5														
63.637	26.990	4730	554.3(1719)	1.1707	23.546	3420											
63.637	11.344	4171	230.1(1484)	1.1990	23.793	3236	1.245	4028	2.701	0.16835	15.322	0.3553	2951	10.537	192.6	0.91	0.80
COMBUSTOR	0	44	37 3														
66.101	25.182	4725	542.9(1716)	1.1694	23.570	3414											
66.101	11.191	4208	238.7(1499)	1.1953	23.772	3244	1.203	3901	2.705	0.15958	15.322	0.3749	2932	9.675	191.4	0.91	0.81
COMBUSTOR	0	45	38 4														
66.477	23.189	4768	541.0(1733)	1.1638	23.621	3418											
66.477	11.024	4311	258.3(1540)	1.1849	23.835	3264	1.152	3761	2.713	0.14835	15.322	0.4032	2930	8.672	191.2	0.91	0.84
COMBUSTOR REGEN	46	39	21														
66.477	23.189	4933	680.2(1805)	1.1545	23.455	3475											
66.477	15.802	4712	524.0(1710)	1.1608	23.603	3394	0.824	2796	2.742	0.14835	15.322	0.4032	2964	6.446	193.4	0.91	0.84
NOZZLE AE	47	40	5														
88.713	23.189	4768	541.0(1664)	1.1638	23.621	3418											
88.713	0.695	2554	-524.0(842)	1.2800	24.016	2602	2.806	7300	2.713	0.03088	15.322	1.9371	3821	3.504	249.4	0.91	0.84
NOZZLE PO	48	41	5														
88.713	23.189	4768	541.0(1664)	1.1638	23.621	3418											
88.713	0.154	1813	-793.9(573)	1.3104	24.017	2217	3.686	8173	2.713	0.01081	15.322	5.9322	4111	1.373	268.3	0.91	0.84
NOZZLE AE REGEN	49	42	5														
88.713	23.189	4933	680.2(1805)	1.1545	23.455	3475											
88.713	0.744	2793	-432.4(932)	1.2707	24.015	2711	2.753	7461	2.742	0.03088	15.322	1.9371	3922	3.581	256.0	0.91	0.84
NOZZLE PO REGEN	50	43	5														
88.713	23.189	4933	680.2(1805)	1.1545	23.455	3475											
88.713	0.154	1966	-739.7(627)	1.3033	24.017	2303	3.660	8429	2.742	0.01028	15.322	5.8188	4244	1.347	277.0	0.91	0.84
FICTIVE COMBUSTR	69	62	0														
66.477	326.253	5304	541.0(1945)	1.1689	24.206	3568											
66.477	0.154	1115	-1260.0(334)	1.3453	24.673	1739	5.460	9493	2.494	0.02097	15.322	2.8527	4634	3.094	302.4	0.91	1.00
FICTIVE NOZZLE	70	63	0														
88.713	12.546	4676	512.0(1695)	1.1592	23.594	3380											
88.713	0.939	3060	-326.7(1035)	1.2567	24.010	2824	2.294	6478	2.759	0.03088	15.322	1.9371	3551	3.109	231.8	0.91	0.84

YAB8	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/P80	P-IB/PT0	P-OB/P80	P-OB/PT0
6.981E-01	6.900E-01	0.000	-2.732E-01	0.000	0.000	0.000	2.470E-02	4.472E 00	6.907E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.472E 00	6.907E-04	0.000	0.000
3.070E 01	1.025E 00	0.000	-9.248E 01	0.000	0.000	0.000	5.053E 02	6.643E 00	1.026E-03	0.000	0.000
3.508E 01	1.892E 00	0.000	-1.870E 02	0.000	0.000	0.000	6.804E 02	1.226E 01	1.894E-03	0.000	0.000
3.595E 01	2.190E 00	0.000	-2.056E 02	0.000	0.000	0.000	7.013E 02	1.419E 01	2.192E-03	0.000	0.000
3.606E 01	2.055E 00	0.000	-2.271E 02	-1.907E 02	-1.907E 02	0.000	7.246E 02	1.332E 01	2.057E-03	0.000	0.000
3.648E 01	2.269E 00	0.000	-2.456E 02	-1.953E 02	-1.953E 02	0.000	7.443E 02	1.470E 01	2.271E-03	0.000	0.000
3.661E 01	2.302E 00	3.231E 00	-2.854E 02	-1.968E 02	-1.968E 02	0.000	7.507E 02	1.492E 01	2.304E-03	2.094E 01	3.234E-03
3.662E 01	2.304E 00	3.247E 00	-2.855E 02	-1.969E 02	-1.969E 02	0.000	7.509E 02	1.493E 01	2.306E-03	2.104E 01	3.250E-03
3.701E 01	2.400E 00	4.264E 00	-2.876E 02	-2.014E 02	-2.014E 02	0.000	7.913E 02	1.555E 01	2.402E-03	2.763E 01	4.268E-03
3.729E 01	2.295E 00	4.987E 00	-2.875E 02	-2.047E 02	-2.047E 02	0.000	8.204E 02	1.488E 01	2.298E-03	3.232E 01	4.992E-03
3.803E 01	2.015E 00	8.299E 00	-2.712E 02	-2.141E 02	-2.141E 02	0.000	9.004E 02	1.306E 01	2.017E-03	5.378E 01	8.307E-03
3.875E 01	6.664E 00	1.149E 01	-2.692E 02	-2.916E 02	-2.253E 02	-6.647E 01	9.802E 02	4.319E 01	6.671E-03	7.449E 01	1.151E-02
3.875E 01	6.684E 00	1.148E 01	-2.692E 02	-2.920E 02	-2.254E 02	-6.666E 01	9.806E 02	4.332E 01	6.691E-03	7.442E 01	1.150E-02
3.901E 01	8.370E 00	1.064E 01	-2.738E 02	-3.130E 02	-2.303E 02	-8.263E 01	1.010E 03	5.424E 01	8.378E-03	6.896E 01	1.065E-02
3.950E 01	1.137E 01	9.053E 00	-2.913E 02	-3.538E 02	-2.412E 02	-1.126E 02	1.066E 03	7.369E 01	1.138E-02	5.867E 01	9.062E-03
3.977E 01	1.099E 01	8.187E 00	-3.013E 02	-3.769E 02	-2.480E 02	-1.289E 02	1.097E 03	7.125E 01	1.100E-02	5.306E 01	8.196E-03
4.000E 01	1.067E 01	7.853E 00	-3.073E 02	-3.975E 02	-2.545E 02	-1.431E 02	1.124E 03	6.912E 01	1.068E-02	5.089E 01	7.861E-03
4.024E 01	1.208E 01	7.512E 00	-3.148E 02	-4.189E 02	-2.615E 02	-1.574E 02	1.151E 03	7.828E 01	1.209E-02	4.869E 01	7.520E-03
4.040E 01	1.305E 01	9.461E 00	-3.197E 02	-4.338E 02	-2.665E 02	-1.673E 02	1.170E 03	8.458E 01	1.306E-02	6.132E 01	9.471E-03
4.041E 01	1.311E 01	9.581E 00	-3.199E 02	-4.347E 02	-2.668E 02	-1.679E 02	1.172E 03	8.497E 01	1.312E-02	6.209E 01	9.590E-03
4.075E 01	1.512E 01	1.361E 01	-3.259E 02	-4.659E 02	-2.776E 02	-1.882E 02	1.211E 03	9.799E 01	1.514E-02	8.818E 01	1.362E-02
4.124E 01	1.804E 01	1.950E 00	-3.488E 02	-5.119E 02	-2.946E 02	-2.174E 02	1.269E 03	1.169E 02	1.806E-02	1.264E 01	1.952E-03
4.150E 01	1.961E 01	2.020E 00	-3.716E 02	-5.370E 02	-3.043E 02	-2.327E 02	1.300E 03	1.271E 02	1.963E-02	1.309E 01	2.022E-03
4.246E 01	7.500E 00	2.276E 00	-4.197E 02	-6.369E 02	-3.487E 02	-2.883E 02	1.414E 03	4.861E 01	7.508E-03	1.475E 01	2.278E-03
4.273E 01	1.077E 01	2.348E 00	-4.266E 02	-6.677E 02	-3.644E 02	-3.033E 02	1.446E 03	6.981E 01	1.078E-02	1.522E 01	2.351E-03
4.280E 01	1.155E 01	2.366E 00	-4.288E 02	-6.751E 02	-3.684E 02	-3.067E 02	1.454E 03	7.488E 01	1.157E-02	1.533E 01	2.368E-03
4.431E 01	2.976E 01	1.915E 01	-4.660E 02	-8.613E 02	-4.935E 02	-3.679E 02	1.636E 03	1.928E 02	2.979E-02	1.241E 02	1.917E-02
4.480E 01	3.565E 01	2.458E 01	-4.818E 02	-9.292E 02	-5.468E 02	-3.829E 02	1.696E 03	2.310E 02	3.569E-02	1.593E 02	2.461E-02
4.552E 01	3.429E 01	3.254E 01	-4.941E 02	-1.032E 03	-6.277E 02	-4.038E 02	1.783E 03	2.222E 02	3.432E-02	2.109E 02	3.257E-02
4.622E 01	3.295E 01	3.094E 01	-4.760E 02	-1.150E 03	-7.041E 02	-4.459E 02	1.870E 03	2.136E 02	3.299E-02	2.005E 02	3.097E-02
4.623E 01	3.293E 01	3.091E 01	-4.760E 02	-1.152E 03	-7.052E 02	-4.468E 02	1.871E 03	2.134E 02	3.297E-02	2.003E 02	3.094E-02
4.625E 01	3.290E 01	3.087E 01	-4.745E 02	-1.156E 03	-7.071E 02	-4.485E 02	1.873E 03	2.132E 02	3.293E-02	2.001E 02	3.090E-02
4.626E 01	3.288E 01	3.085E 01	-4.742E 02	-1.158E 03	-7.082E 02	-4.494E 02	1.874E 03	2.131E 02	3.291E-02	1.999E 02	3.088E-02
4.731E 01	3.089E 01	2.846E 01	-4.217E 02	-1.397E 03	-8.161E 02	-5.805E 02	2.004E 03	2.002E 02	3.092E-02	1.845E 02	2.849E-02
4.811E 01	2.887E 01	2.665E 01	-3.601E 02	-1.600E 03	-8.939E 02	-7.062E 02	2.103E 03	1.871E 02	2.890E-02	1.727E 02	2.667E-02
4.876E 01	2.517E 01	2.517E 01	-2.833E 02	-1.762E 03	-9.540E 02	-8.082E 02	2.184E 03	1.632E 02	2.520E-02	1.632E 02	2.520E-02
5.020E 01	1.557E 01	1.557E 01	-1.321E 02	-2.047E 03	-1.079E 03	-9.679E 02	2.363E 03	1.009E 02	1.559E-02	1.009E 02	1.559E-02
5.021E 01	1.551E 01	1.551E 01	-1.313E 02	-2.048E 03	-1.080E 03	-9.685E 02	2.365E 03	1.005E 02	1.552E-02	1.005E 02	1.552E-02
5.074E 01	1.197E 01	1.197E 01	-9.331E 01	-2.116E 03	-1.123E 03	-9.931E 02	2.431E 03	7.761E 01	1.199E-02	7.761E 01	1.199E-02
5.215E 01	1.085E 01	1.085E 01	-8.933E 00	-2.266E 03	-1.229E 03	-1.037E 03	2.609E 03	7.032E 01	1.086E-02	7.032E 01	1.086E-02
5.425E 01	7.600E 00	7.600E 00	9.264E 01	-2.467E 03	-1.366E 03	-1.101E 03	2.875E 03	4.925E 01	7.608E-03	4.925E 01	7.608E-03
5.475E 01	8.000E 00	8.000E 00	1.129E 02	-2.508E 03	-1.395E 03	-1.114E 03	2.939E 03	5.185E 01	8.008E-03	5.185E 01	8.008E-03
5.550E 01	6.994E 00	6.994E 00	1.419E 02	-2.566E 03	-1.435E 03	-1.131E 03	3.035E 03	4.533E 01	7.001E-03	4.533E 01	7.001E-03
5.576E 01	6.641E 00	6.641E 00	1.511E 02	-2.585E 03	-1.448E 03	-1.137E 03	3.068E 03	4.304E 01	6.648E-03	4.304E 01	6.648E-03
5.626E 01	3.819E 00	5.975E 00	2.277E 02	-2.621E 03	-1.473E 03	-1.148E 03	3.102E 03	2.475E 01	3.823E-03	3.872E 01	5.981E-03
5.768E 01	9.070E 00	9.070E 00	2.812E 02	-2.717E 03	-1.539E 03	-1.178E 03	3.209E 03	5.878E 01	9.079E-03	5.878E 01	9.079E-03
5.774E 01	7.975E 00	9.189E 00	2.838E 02	-2.720E 03	-1.541E 03	-1.179E 03	3.217E 03	5.168E 01	7.983E-03	5.955E 01	9.198E-03
5.788E 01	7.975E 00	9.493E 00	2.899E 02	-2.729E 03	-1.547E 03	-1.182E 03	3.234E 03	5.168E 01	7.983E-03	6.152E 01	9.503E-03
5.796E 01	9.667E 00	9.667E 00	2.938E 02	-2.733E 03	-1.550E 03	-1.183E 03	3.245E 03	6.265E 01	9.677E-03	6.265E 01	9.677E-03
5.824E 01	1.027E 01	1.027E 01	3.068E 02	-2.750E 03	-1.561E 03	-1.189E 03	3.280E 03	6.659E 01	1.029E-02	6.659E 01	1.029E-02
5.846E 01	1.007E 01	1.007E 01	3.167E 02	-2.764E 03	-1.569E 03	-1.194E 03	3.309E 03	6.524E 01	1.008E-02	6.524E 01	1.008E-02
5.919E 01	9.400E 00	9.400E 00	3.431E 02	-2.806E 03	-1.595E 03	-1.211E 03	3.402E 03	6.092E 01	9.409E-03	6.092E 01	9.409E-03
6.021E 01	1.207E 01	1.207E 01	3.679E 02	-2.863E 03	-1.625E 03	-1.238E 03	3.532E 03	7.826E 01	1.209E-02	7.826E 01	1.209E-02
6.222E 01	1.354E 01	1.354E 01	3.709E 02	-2.980E 03	-1.671E 03	-1.309E 03	3.790E 03	8.773E 01	1.355E-02	8.773E 01	1.355E-02
6.364E 01	1.134E 01	1.134E 01	3.709E 02	-3.070E 03	-1.699E 03	-1.371E 03	3.972E 03	7.352E 01	1.136E-02	7.352E 01	1.136E-02

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	Q-ALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.610E 01	1.119E 01	1.119E 01	3.709E 02	-3.245E 03	-1.755E 03	-1.490E 03	4.289E 03	7.252E 01	1.120E-02	7.252E 01	1.120E-02
6.648E 01	1.088E 01	1.117E 01	3.709E 02	-3.274E 03	-1.764E 03	-1.510E 03	4.337E 03	7.051E 01	1.089E-02	7.237E 01	1.118E-02
6.652E 01	1.088E 01	1.116E 01	3.709E 02	-3.277E 03	-1.765E 03	-1.512E 03	4.342E 03	7.051E 01	1.089E-02	7.236E 01	1.118E-02
6.672E 01	1.029E 01	1.115E 01	3.709E 02	-3.291E 03	-1.770E 03	-1.521E 03	4.368E 03	6.671E 01	1.030E-02	7.228E 01	1.116E-02
6.838E 01	5.430E 00	4.905E 00	4.596E 02	-3.395E 03	-1.804E 03	-1.592E 03	4.584E 03	3.519E 01	5.435E-03	3.179E 01	4.910E-03
6.905E 01	4.006E 00	4.777E 00	5.563E 02	-3.432E 03	-1.814E 03	-1.618E 03	4.665E 03	2.596E 01	4.010E-03	3.096E 01	4.782E-03
6.982E 01	2.370E 00	3.513E 00	6.865E 02	-3.472E 03	-1.824E 03	-1.648E 03	4.760E 03	1.536E 01	2.372E-03	2.276E 01	3.516E-03
7.054E 01	1.880E 00	2.330E 00	7.210E 02	-3.506E 03	-1.831E 03	-1.676E 03	4.848E 03	1.218E 01	1.882E-03	1.510E 01	2.332E-03
7.115E 01	1.465E 00	2.108E 00	7.629E 02	-3.533E 03	-1.836E 03	-1.697E 03	4.922E 03	9.494E 00	1.466E-03	1.366E 01	2.110E-03
7.253E 01	8.700E-01	1.606E 00	8.309E 02	-3.580E 03	-1.845E 03	-1.735E 03	5.088E 03	5.638E 00	8.709E-04	1.041E 01	1.608E-03
7.406E 01	5.148E-01	1.050E 00	8.772E 02	-3.619E 03	-1.853E 03	-1.767E 03	5.273E 03	3.336E 00	5.153E-04	6.805E 00	1.051E-03
7.421E 01	4.800E-01	9.166E-01	8.803E 02	-3.623E 03	-1.853E 03	-1.770E 03	5.290E 03	3.111E 00	4.805E-04	5.941E 00	9.176E-04
7.496E 01	5.575E-01	2.500E-01	8.993E 02	-3.643E 03	-1.856E 03	-1.786E 03	5.374E 03	3.613E 00	5.581E-04	1.620E 00	2.503E-04
7.496E 01	5.579E-01	2.464E-01	8.998E 02	-3.643E 03	-1.856E 03	-1.787E 03	5.375E 03	3.616E 00	5.585E-04	1.597E 00	2.467E-04
7.629E 01	6.950E-01	0.000	9.130E 02	-3.683E 03	-1.861E 03	-1.822E 03	5.426E 03	4.504E 00	6.957E-04	0.000	0.000
7.914E 01	1.080E 00	0.000	9.485E 02	-3.691E 03	-1.869E 03	-1.822E 03	5.525E 03	6.999E 00	1.081E-03	0.000	0.000
8.304E 01	7.050E-01	0.000	9.867E 02	-3.699E 03	-1.877E 03	-1.822E 03	5.630E 03	4.569E 00	7.057E-04	0.000	0.000
8.585E 01	6.300E-01	0.000	1.002E 03	-3.705E 03	-1.883E 03	-1.822E 03	5.684E 03	4.083E 00	6.306E-04	0.000	0.000
8.871E 01	8.400E-01	0.000	1.019E 03	-3.717E 03	-1.895E 03	-1.822E 03	5.707E 03	5.444E 00	8.408E-04	0.000	0.000
8.871E 01	8.404E-01	0.000	1.019E 03	-3.717E 03	-1.895E 03	-1.822E 03	5.707E 03	5.447E 00	8.413E-04	0.000	0.000

X	DDRAG	CDRAG	CP	HC
4.040E 01	8.483E 01	8.483E 01	2.254E-03	3.444E-02
4.041E 01	1.725E-01	8.500E 01	2.922E-03	3.429E-02
4.075E 01	5.970E 00	9.097E 01	2.505E-03	4.499E-02
4.124E 01	8.081E 00	9.906E 01	2.554E-03	3.414E-02
4.150E 01	4.332E 00	1.034E 02	2.510E-03	3.644E-02
4.246E 01	1.580E 01	1.192E 02	2.685E-03	1.949E-02
4.273E 01	4.447E 00	1.236E 02	2.648E-03	2.418E-02
4.280E 01	1.037E 00	1.247E 02	2.645E-03	2.522E-02
4.431E 01	2.234E 01	1.470E 02	3.052E-03	5.069E-02
4.480E 01	6.326E 00	1.533E 02	3.178E-03	5.366E-02
4.552E 01	8.774E 00	1.621E 02	3.309E-03	5.334E-02
4.622E 01	8.690E 00	1.708E 02	3.502E-03	5.024E-02
4.623E 01	1.226E-01	1.709E 02	3.252E-03	5.482E-02
4.625E 01	2.155E-01	1.711E 02	3.513E-03	5.201E-02
4.626E 01	1.214E-01	1.713E 02	3.175E-03	5.845E-02
4.731E 01	1.149E 01	1.827E 02	3.103E-03	5.602E-02
4.811E 01	8.257E 00	1.910E 02	3.123E-03	5.242E-02
4.876E 01	6.385E 00	1.974E 02	3.141E-03	4.823E-02
5.020E 01	1.413E 01	2.115E 02	3.297E-03	3.491E-02
5.021E 01	9.612E-02	2.116E 02	3.066E-03	3.738E-02
5.074E 01	4.877E 00	2.165E 02	3.006E-03	3.205E-02
5.215E 01	1.174E 01	2.282E 02	2.839E-03	3.016E-02
5.425E 01	1.510E 01	2.433E 02	2.883E-03	2.240E-02
5.475E 01	3.318E 00	2.467E 02	2.867E-03	2.301E-02
5.550E 01	4.810E 00	2.515E 02	2.923E-03	2.041E-02
5.576E 01	1.661E 00	2.531E 02	2.889E-03	1.979E-02
5.626E 01	1.458E 00	2.546E 02	2.757E-03	1.546E-02
5.768E 01	3.798E 00	2.584E 02	2.933E-03	2.142E-02
5.774E 01	2.454E-01	2.586E 02	3.415E-03	1.782E-02
5.788E 01	6.649E-01	2.593E 02	3.385E-03	1.811E-02
5.796E 01	3.867E-01	2.597E 02	3.622E-03	1.785E-02
5.824E 01	1.328E 00	2.610E 02	3.467E-03	1.914E-02
5.806E 01	1.046E 00	2.621E 02	3.502E-03	1.874E-02
5.919E 01	3.413E 00	2.655E 02	3.472E-03	1.819E-02
6.021E 01	4.556E 00	2.700E 02	3.502E-03	2.000E-02
6.222E 01	8.470E 00	2.785E 02	3.642E-03	2.001E-02
6.364E 01	6.480E 00	2.850E 02	3.615E-03	1.916E-02
6.610E 01	1.147E 01	2.964E 02	3.562E-03	1.891E-02
6.648E 01	1.589E 00	2.980E 02	3.620E-03	1.806E-02
6.652E 01	1.627E-01	2.982E 02	3.688E-03	1.818E-02
6.672E 01	8.246E-01	2.990E 02	3.682E-03	1.803E-02
6.838E 01	6.862E 00	3.059E 02	3.557E-03	1.266E-02
6.905E 01	2.493E 00	3.084E 02	3.530E-03	1.145E-02
6.982E 01	2.609E 00	3.110E 02	3.470E-03	8.817E-03
7.094E 01	2.063E 00	3.130E 02	3.420E-03	6.992E-03
7.115E 01	1.533E 00	3.146E 02	3.395E-03	6.217E-03
7.293E 01	2.991E 00	3.176E 02	3.339E-03	4.751E-03
7.406E 01	2.616E 00	3.202E 02	3.270E-03	3.360E-03
7.421E 01	2.042E-01	3.204E 02	3.254E-03	3.081E-03
7.496E 01	8.208E-01	3.212E 02	3.175E-03	2.016E-03
7.496E 01	1.299E-03	3.212E 02	3.175E-03	2.010E-03
7.629E 01	5.013E-01	3.217E 02	3.240E-03	3.057E-03
7.914E 01	1.281E 00	3.230E 02	3.283E-03	4.240E-03
8.304E 01	1.366E 00	3.244E 02	3.204E-03	3.052E-03
8.585E 01	5.951E-01	3.249E 02	3.174E-03	2.786E-03
8.871E 01	2.407E-01	3.252E 02	3.199E-03	3.453E-03

READING = 0048 BLOCK = 201 TIME = 249.401 MACH 7.2 PT = 998.999 TT = 3150.9

X	DDRAG	CDRAG	CF	HC
8.871E 01	0.000	3.252E 02	3.199E-03	3.050E-03

ORIGINAL PAGE IS
OF POOR QUALITY

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	642.	(LBF)
MEASURED THRUST	740.	(LBF)
CALCULATED SPECIFIC IMPULSE	1505.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	1735.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.4425	
MEASURED THRUST COEFFICIENT	0.5099	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3645.	(LBF)
NET THRUST	736.	(LBF)
SPECIFIC IMPULSE	1725.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.5071	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.8	(LBF)
INLET MOMENTUM CHANGE	-404.5	(LBF)
COMBUSTOR FRICTION DRAG	213.2	(LBF)
COMBUSTOR STRUT DRAG	23.27	(LBF)
COMBUSTOR MOMENTUM CHANGE	425.	(LBF)
NOZZLE FRICTION DRAG	27.19	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	621.	(LBF)
NOZZLE PRESSURE INTEGRAL	648.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-725.	(LBF)
TOTAL STRUT DRAG	23.27	(LBF)
CAVITY FORCE	-529.	(LBF)
CALCULATED LOAD CELL FORCE	-612.	(LBF)
MEASURED LOAD CELL FORCE	-515.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, -150.4, -120.8,

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9891	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1011	
DELTA PT2	0.0893	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3266	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1024	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9043	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9131	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9313	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8818	
ENTHALPY AT P0 - SUPERSONIC	-31.86	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	6.36	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0286
EQUIVALENCE RATIO	0.913
COMBUSTOR EFFICIENCY	0.839
TOTAL PRESSURE RATIO	0.0711
COMBUSTOR EFFECTIVENESS	0.7536

INJECTOR DISCHARGE COEFFICIENTS 0.9294, 0.8232, 1.0666, 0.8135

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9292
NOZZLE COEFFICIENT - CT	0.8452
PROCESS EFFICIENCY	0.8162
KINETIC ENERGY EFFICIENCY	0.8392

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7369	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.621	(IN)
NOZZLE SHROUD TRAILING EDGE	74.961	(IN)
NOZZLE PLUG TRAILING EDGE	88.713	(IN)
STRUT LEADING EDGE	57.877	(IN)
STRUT TRAILING EDGE	66.477	(IN)
COMBUSTOR EXIT	66.477	(IN)

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.722	
1C	44.300	
2A	50.197	D
2C	46.250	E
3A	55.487	
3B	57.672	
4	46.222	C

2/12/75

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	WOMIN	C	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6														
0.000	998.749	3086	696.3(821)	1.2906	28.903	2617											
0.000	0.155	298	-57.6(72)	1.3964	28.901	846	7.258	6142	1.816	0.05959	15.080	0.9880	2918	5.688	193.5		
SPIKE TIP NS		2	0 7														
0.600	11.312	3086	696.3(821)	1.2903	28.901	2617											
0.600	10.428	3029	679.2(804)	1.2921	28.901	2595	0.357	926	2.124	0.05959	15.080	0.9880	3073	0.857	203.8		
WIND TUNNEL		3	0 0														
0.000	998.749	3086	696.3(821)	1.2906	28.903	2617											
0.000	0.169	306	-55.7(73)	1.3966	28.901	857	7.158	6135	1.816	0.06339	16.043	0.9880	3102	6.044	193.3		
SPIKE TIP NS		4	0 0														
0.600	11.312	3086	696.3(821)	1.2903	28.901	2617											
0.600	10.297	3021	676.6(802)	1.2924	28.901	2591	0.384	994	2.124	0.06339	16.043	0.9880	3102	0.980	193.3		
INLET THROAT		5	0 3														
40.400	320.771	2997	669.2(795)	1.2934	28.902	2582											
40.408	10.582	1295	188.5(318)	1.3606	28.901	1741	2.817	4905	1.885	0.74972	15.080	0.0785	2512	57.143	166.6		
INLET UPNRSK		6	0 3														
40.400	320.771	2997	669.2(795)	1.2934	28.902	2582											
40.400	9.128	1245	175.6(305)	1.3637	28.901	1709	2.908	4970	1.885	0.68156	15.080	0.0864	2531	52.641	167.9		
INLET DNNRSK		7	0 4														
40.400	108.558	2997	669.2(795)	1.2934	28.902	2582											
40.400	89.311	2904	641.2(767)	1.2963	28.902	2545	0.466	1185	1.964	0.68156	15.080	0.0864	2531	12.549	167.9		
COMBUSTOR	0	8	1 21														
40.410	216.194	2935	681.1(848)	1.2977	26.360	2680											
40.410	11.712	1433	217.0(387)	1.3547	26.360	1914	2.518	4819	2.057	0.75530	15.195	0.0785	2511	56.561	165.3	0.24	0.07
COMBUSTOR	0	9	2 3														
40.747	200.715	2972	679.1(859)	1.2989	26.405	2693											
40.747	15.123	1584	247.3(431)	1.3463	26.405	2004	2.320	4649	2.065	0.75808	15.195	0.0783	2498	54.765	164.4	0.24	0.11
COMBUSTOR	0	10	3 21														
41.237	202.497	2849	676.3(822)	1.3014	26.285	2648											
41.237	10.776	1377	223.9(372)	1.3586	26.285	1881	2.530	4758	2.053	0.75203	15.195	0.0789	2465	55.608	162.2	0.24	0.02
COMBUSTOR	0	11	4 21														
41.500	187.875	2828	674.8(815)	1.3024	26.267	2640											
41.500	11.762	1428	202.9(386)	1.3561	26.267	1912	2.431	4649	2.057	0.74487	15.195	0.0796	2435	53.812	160.3	0.24	0.00
COMBUSTOR	0	12	5 21														
42.460	104.478	2806	668.4(808)	1.3031	26.265	2631											
42.460	4.891	1307	210.2(352)	1.3628	26.264	1836	2.608	4788	2.099	0.70251	15.195	0.0844	2367	52.277	155.8	0.24	0.00
COMBUSTOR	0	13	6 21														
42.732	117.028	2799	666.4(806)	1.3034	26.264	2628											
42.732	6.641	1372	228.8(371)	1.3591	26.264	1879	2.491	4679	2.089	0.69259	15.195	0.0857	2356	50.367	155.0	0.24	0.00
COMBUSTOR	0	14	7 21														
42.797	68.466	3290	665.9(956)	1.2799	26.795	2795											
42.797	7.059	1936	233.4(531)	1.3269	26.798	2183	2.131	4652	2.167	0.69002	15.195	0.0860	2352	49.885	154.8	0.24	0.41
COMBUSTOR	0	15	8 2														
44.310	85.348	3245	653.1(942)	1.2817	26.788	2779											
44.310	25.352	2461	397.4(692)	1.3088	26.789	2444	1.463	3577	2.147	0.63874	15.195	0.0929	2292	35.503	150.9	0.24	0.80
COMBUSTOR	0	16	9 4														
44.800	77.527	3399	648.2(989)	1.2738	26.977	2825											
44.800	31.275	2780	442.2(790)	1.2952	26.981	2576	1.247	3211	2.162	0.63075	15.195	0.0941	2270	31.476	149.4	0.24	0.54
COMBUSTOR	0	17	10 3														
45.517	74.824	3415	641.0(994)	1.2726	27.019	2828											
45.517	34.412	2879	461.5(820)	1.2913	27.023	2615	1.146	2996	2.165	0.62637	15.195	0.0947	2250	29.166	148.1	0.24	0.57
COMBUSTOR	0	18	11 6														
46.222	73.305	3096	645.0(970)	1.2897	24.561	2843											
46.222	32.516	2568	459.2(788)	1.3074	24.562	2607	1.170	3049	2.294	0.61347	15.311	0.0974	2262	29.082	147.8	0.49	0.23

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	*	A/AC	MOMTP	O	IVAC	PHT	ETAC
COMBUSTOR	0	19	12 4														
46.232	73.310	3096	604.9(970)	1.2897	24.561	2843											
46.232	32.489	2567	458.9(788)	1.3075	24.562	2607	1.170	3051	2.294	0.61368	15.311	0.0974	2262	29.095	147.6	0.49	0.23
COMBUSTOR	0	20	13 6														
46.250	72.428	2798	655.4(933)	1.3049	22.636	2832											
46.250	32.440	2310	475.8(755)	1.3214	22.636	2589	1.158	2998	2.399	0.61675	15.419	0.0976	2248	28.735	145.8	0.72	0.10
COMBUSTOR	0	21	14 2														
46.260	72.400	2798	655.3(933)	1.3049	22.637	2832											
46.260	32.414	2310	475.5(755)	1.3214	22.637	2589	1.158	2999	2.399	0.61681	15.419	0.0977	2248	28.728	145.6	0.72	0.10
COMBUSTOR	0	22	15 4														
47.310	69.015	2912	639.4(972)	1.2991	22.777	2873											
47.310	29.590	2385	444.2(779)	1.3169	22.777	2618	1.193	3125	2.412	0.57142	15.419	0.1083	2296	27.750	148.9	0.72	0.15
COMBUSTOR	0	23	16 4														
48.110	65.036	3077	626.0(1030)	1.2909	22.962	2933											
48.110	28.097	2534	422.4(830)	1.3093	22.963	2680	1.191	3192	2.431	0.52511	15.419	0.1146	2354	26.049	152.6	0.72	0.22
COMBUSTOR	0	24	17 4														
48.797	61.203	3272	615.4(1099)	1.2811	23.172	2990											
48.797	25.700	2691	394.1(883)	1.3011	23.175	2740	1.214	3328	2.450	0.47667	15.419	0.1263	2426	24.650	157.3	0.72	0.29
COMBUSTOR	0	25	18 5														
50.197	58.513	3127	604.4(1099)	1.2885	21.947	3021											
50.197	15.852	2308	285.0(784)	1.3166	21.948	2624	1.524	3998	2.541	0.38996	15.502	0.1552	2556	24.228	164.9	0.90	0.23
COMBUSTOR	0	26	19 2														
50.207	58.546	3125	604.3(1098)	1.2886	21.946	3021											
50.207	15.783	2304	284.0(782)	1.3168	21.947	2622	1.527	4003	2.540	0.38945	15.502	0.1554	2557	24.230	165.0	0.90	0.23
COMBUSTOR	0	27	20 4														
50.737	62.358	2995	599.2(1049)	1.2946	21.841	2971											
50.737	12.158	2030	229.2(683)	1.3284	21.842	2478	1.737	4303	2.523	0.36423	15.502	0.1662	2591	24.358	167.1	0.90	0.20
COMBUSTOR	0	28	21 4														
52.147	53.903	3208	587.3(1128)	1.2840	22.058	3047											
52.147	10.987	2219	201.8(749)	1.3184	22.060	2568	1.710	4392	2.553	0.31043	15.502	0.1950	2665	21.186	171.9	0.90	0.27
COMBUSTOR	0	29	22 4														
54.247	54.324	3132	569.7(1102)	1.2871	21.962	3021											
54.247	7.375	1956	116.6(654)	1.3289	21.964	2425	1.963	4762	2.550	0.25521	15.549	0.2379	2751	18.885	176.9	0.90	0.26
COMBUSTOR	0	30	23 4														
54.747	48.550	3281	566.5(1158)	1.2794	22.105	3073											
54.747	7.858	2155	126.4(725)	1.3192	22.108	2529	1.856	4693	2.572	0.24478	15.549	0.2480	2767	17.851	178.0	0.90	0.30
COMBUSTOR	0	31	24 4														
55.497	50.914	3202	562.1(1128)	1.2834	22.042	3044											
55.497	6.625	1986	92.1(664)	1.3266	22.045	2438	1.989	4850	2.561	0.23074	15.549	0.2631	2790	17.391	179.4	0.90	0.28
COMBUSTOR	0	32	25 4														
55.760	52.323	3164	560.6(1114)	1.2853	22.011	3031											
55.760	6.192	1913	79.4(638)	1.3300	22.013	2397	2.047	4907	2.555	0.22622	15.549	0.2684	2797	17.252	179.9	0.90	0.27
COMBUSTOR	0	33	26 4														
56.257	46.761	3223	557.9(1136)	1.2822	22.071	3051											
56.257	4.550	1863	34.6(619)	1.3313	22.073	2364	2.165	5117	2.570	0.17851	15.549	0.3401	2870	14.197	184.5	0.90	0.29
COMBUSTOR	0	34	27 5														
57.682	34.919	3614	550.9(1284)	1.2603	22.456	3176											
57.682	5.537	2405	65.2(812)	1.3053	22.467	2636	1.870	4930	2.622	0.16499	15.549	0.3679	2904	12.641	186.8	0.90	0.41
COMBUSTOR	0	35	28 4														
57.737	32.600	3738	550.7(1331)	1.2525	22.577	3211											
57.737	6.059	2599	84.9(883)	1.2967	22.595	2723	1.773	4828	2.636	0.16456	15.549	0.3689	2906	12.346	186.9	0.90	0.44
COMBUSTOR	0	36	29 3														
57.877	32.246	3756	550.1(1338)	1.2513	22.596	3216											
57.877	6.067	2621	85.0(891)	1.2956	22.615	2733	1.765	4824	2.637	0.16337	15.549	0.3716	2909	12.248	187.1	0.90	0.45
COMBUSTOR	0	37	30 9														
57.957	34.991	3633	549.7(1291)	1.2592	22.477	3181											
57.957	5.568	2423	62.4(818)	1.3044	22.489	2643	1.868	4938	2.623	0.16517	15.549	0.3675	2911	12.676	187.2	0.90	0.41

READING = 0088 BLOCK = 208 TIME = 305.701 MACH 7.3 PT = 998.749 TT = 5085.7

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	PORTP	C	IVAC	PHI	ETAC
COMBUSTOR	0	38	31 3														
58.237	34.619	3657	508.6(1500)	1.2577	22.503	3168											
58.237	5.600	2448	66.6(927)	1.3031	22.516	2654	1.962	4902	2.625	0.16469	15.549	0.3686	2917	12.647	187.6	0.90	0.42
COMBUSTOR	0	39	32 4														
58.463	38.827	3500	547.7(1240)	1.2671	22.353	3141											
58.463	4.892	2191	30.6(734)	1.3146	22.360	2531	2.010	5087	2.605	0.16432	15.549	0.3695	2921	12.989	187.9	0.90	0.38
COMBUSTOR	0	40	33 7														
59.187	75.628	2924	545.2(1023)	1.2963	21.832	2938											
59.187	2.625	1270	-67.8(414)	1.3632	21.832	1985	2.790	5538	2.499	0.16177	15.549	0.3753	2929	13.923	188.4	0.90	0.22
COMBUSTOR	0	41	34 6														
60.207	27.934	4177	542.0(1499)	1.2196	23.005	3315											
60.207	7.725	3258	131.3(1128)	1.2647	23.109	2977	1.523	4533	2.670	0.16074	15.549	0.3777	2938	11.323	189.0	0.90	0.59
COMBUSTOR	0	42	35 5														
62.217	26.296	4522	535.7(1632)	1.1887	23.431	3377											
62.217	10.497	3889	208.8(1371)	1.2239	23.568	3169	1.276	4044	2.688	0.16633	15.549	0.3650	2935	10.454	188.8	0.90	0.73
COMBUSTOR	0	43	36 4														
63.637	28.187	4323	530.9(1555)	1.2073	23.228	3342											
63.637	9.231	3526	157.1(1230)	1.2492	23.317	3065	1.411	4325	2.674	0.17084	15.549	0.3593	2930	11.482	188.5	0.90	0.65
COMBUSTOR	0	44	37 4														
66.101	25.225	4540	521.2(1638)	1.1959	23.487	3376											
66.101	10.648	3953	212.2(1395)	1.2185	23.628	3184	1.235	3932	2.690	0.16194	15.549	0.3749	2923	9.894	188.0	0.90	0.74
COMBUSTOR	0	45	38 4														
66.477	23.118	4617	519.5(1668)	1.1771	23.575	3385											
66.477	10.792	4117	240.1(1460)	1.2041	23.735	3222	1.160	3739	2.699	0.15055	15.549	0.4032	2922	8.747	187.9	0.90	0.78
COMBUSTOR	REGEN	46	39 21														
66.477	23.112	4809	659.9(1750)	1.1645	23.436	3447											
66.477	17.680	4645	552.7(1680)	1.1706	23.524	3390	0.683	2316	2.729	0.15055	15.549	0.4032	2945	5.416	189.4	0.90	0.78
NOZZLE AE		47	40 5														
88.713	23.112	4617	519.5(1609)	1.1771	23.575	3385											
88.713	0.670	2358	-502.3(771)	1.2901	23.837	2519	2.839	7150	2.699	0.03134	15.549	1.9371	3788	3.482	243.6	0.90	0.78
NOZZLE PO		48	41 5														
88.713	23.112	4617	519.5(1609)	1.1771	23.575	3385											
88.713	0.155	1674	-746.7(527)	1.3199	23.837	2147	3.708	7960	2.699	0.01134	15.549	5.3516	4059	1.403	261.0	0.90	0.78
NOZZLE AE REGEN		49	42 5														
88.713	23.112	4809	659.9(1750)	1.1645	23.436	3447											
88.713	0.718	2592	-414.2(858)	1.2813	23.836	2632	2.785	7331	2.729	0.03134	15.549	1.9371	3900	3.571	250.8	0.90	0.78
NOZZLE PO REGEN		50	43 5														
88.713	23.112	4809	659.9(1750)	1.1645	23.436	3447											
88.713	0.155	1824	-694.7(579)	1.3125	23.837	2235	3.684	8233	2.729	0.01077	15.549	5.6377	4202	1.378	270.3	0.90	0.78
FICTIVE COMBUSTR		69	62 0														
66.477	320.771	5261	519.5(1921)	1.1708	24.283	3551											
66.477	0.155	1097	-1250.5(328)	1.3466	24.712	1720	5.458	9411	2.486	0.02121	15.549	2.8620	4662	3.102	299.8	0.90	1.00
FICTIVE NOZZLE		70	63 0														
88.713	13.133	4538	492.1(1636)	1.1732	23.559	3352											
88.713	0.882	2796	-335.9(935)	1.2733	23.835	2725	2.362	6437	2.741	0.03134	15.549	1.9371	3549	3.135	228.2	0.90	0.78

XABS	P-IR	P-OH	PDA	QOX	Q-IP	Q-CE	CA-ALT	P-IR/PSO	P-IR/PTO	P-OH/PSO	P-CP/PTO
6.981E-01	6.900E-01	0.000	-2.732E-01	0.000	0.000	0.000	2.373E-02	4.461E 00	6.909E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.436E 02	4.461E 00	6.909E-04	0.000	0.000
3.070E 01	1.030E 00	0.000	-9.268E 01	0.000	0.000	0.000	5.053E 02	6.660E 00	1.631E-03	0.000	0.000
3.508E 01	1.899E 00	0.000	-1.876E 02	0.000	0.000	0.000	4.804E 02	1.228E 01	1.901E-03	0.000	0.000
3.555E 01	2.215E 00	0.000	-2.063E 02	0.000	0.000	0.000	7.013E 02	1.432E 01	2.218E-03	0.000	0.000
3.606E 01	2.070E 00	0.000	-2.281E 02	-1.813E 02	-1.813E 02	0.000	7.246E 02	1.336E 01	2.073E-03	0.000	0.000
3.648E 01	2.276E 00	0.000	-2.467E 02	-1.857E 02	-1.857E 02	0.000	7.443E 02	1.471E 01	2.278E-03	0.000	0.000
3.661E 01	2.310E 00	3.214E 00	-2.863E 02	-1.871E 02	-1.871E 02	0.000	7.507E 02	1.493E 01	2.313E-03	2.076E 01	3.218E-03
3.662E 01	2.311E 00	3.230E 00	-2.864E 02	-1.872E 02	-1.872E 02	0.000	7.509E 02	1.494E 01	2.314E-03	2.088E 01	3.234E-03
3.701E 01	2.410E 00	4.257E 00	-2.886E 02	-1.915E 02	-1.915E 02	0.000	7.913E 02	1.558E 01	2.413E-03	2.752E 01	4.262E-03
3.729E 01	2.301E 00	4.987E 00	-2.885E 02	-1.946E 02	-1.946E 02	0.000	8.204E 02	1.488E 01	2.304E-03	3.225E 01	4.994E-03
3.803E 01	2.010E 00	8.296E 00	-2.723E 02	-2.036E 02	-2.036E 02	0.000	9.004E 02	1.300E 01	2.013E-03	5.364E 01	8.306E-03
3.875E 01	6.677E 00	1.149E 01	-2.704E 02	-2.760E 02	-2.142E 02	-6.181E 01	9.802E 02	4.317E 01	6.666E-03	7.427E 01	1.150E-02
3.875E 01	6.697E 00	1.148E 01	-2.704E 02	-2.762E 02	-2.142E 02	-6.198E 01	9.806E 02	4.330E 01	6.706E-03	7.421E 01	1.149E-02
3.901E 01	8.390E 00	1.063E 01	-2.750E 02	-2.958E 02	-2.190E 02	-7.685E 01	1.010E 03	5.425E 01	8.401E-03	6.874E 01	1.064E-02
3.950E 01	1.146E 01	9.037E 00	-2.928E 02	-3.339E 02	-2.292E 02	-1.047E 02	1.066E 03	7.410E 01	1.147E-02	5.843E 01	9.049E-03
3.977E 01	1.105E 01	8.169E 00	-3.030E 02	-3.555E 02	-2.357E 02	-1.198E 02	1.097E 03	7.142E 01	1.106E-02	5.282E 01	8.179E-03
4.000E 01	1.068E 01	7.849E 00	-3.091E 02	-3.746E 02	-2.418E 02	-1.330E 02	1.124E 03	6.908E 01	1.070E-02	5.075E 01	7.859E-03
4.024E 01	1.240E 01	7.525E 00	-3.168E 02	-3.948E 02	-2.485E 02	-1.464E 02	1.151E 03	8.014E 01	1.241E-02	4.865E 01	7.534E-03
4.040E 01	1.357E 01	9.649E 00	-3.220E 02	-4.088E 02	-2.532E 02	-1.555E 02	1.170E 03	8.775E 01	1.359E-02	6.239E 01	9.661E-03
4.041E 01	1.364E 01	9.780E 00	-3.222E 02	-4.096E 02	-2.535E 02	-1.561E 02	1.172E 03	8.822E 01	1.366E-02	6.323E 01	9.792E-03
4.075E 01	1.608E 01	1.417E 01	-3.291E 02	-4.388E 02	-2.637E 02	-1.750E 02	1.211E 03	1.039E 02	1.610E-02	9.161E 01	1.419E-02
4.124E 01	1.961E 01	1.937E 00	-3.547E 02	-4.819E 02	-2.798E 02	-2.021E 02	1.269E 03	1.268E 02	1.964E-02	1.253E 01	1.940E-03
4.150E 01	2.151E 01	2.012E 00	-3.798E 02	-5.053E 02	-2.890E 02	-2.163E 02	1.300E 03	1.391E 02	2.154E-02	1.301E 01	2.014E-03
4.246E 01	7.500E 00	2.283E 00	-4.321E 02	-6.016E 02	-3.321E 02	-2.693E 02	1.414E 03	4.849E 01	7.509E-03	1.476E 01	2.286E-03
4.273E 01	1.092E 01	2.360E 00	-4.391E 02	-6.323E 02	-3.482E 02	-2.841E 02	1.446E 03	7.062E 01	1.094E-02	1.526E 01	2.363E-03
4.280E 01	1.174E 01	2.378E 00	-4.413E 02	-6.396E 02	-3.523E 02	-2.875E 02	1.454E 03	7.591E 01	1.176E-02	1.538E 01	2.381E-03
4.431E 01	3.078E 01	1.992E 01	-4.791E 02	-8.352E 02	-4.863E 02	-3.489E 02	1.636E 03	1.990E 02	3.082E-02	1.288E 02	1.994E-02
4.480E 01	3.695E 01	2.560E 01	-4.952E 02	-9.085E 02	-5.450E 02	-3.635E 02	1.696E 03	2.389E 02	3.700E-02	1.655E 02	2.563E-02
4.552E 01	3.491E 01	3.391E 01	-5.067E 02	-1.019E 03	-6.343E 02	-3.849E 02	1.783E 03	2.257E 02	3.496E-02	2.193E 02	3.395E-02
4.622E 01	3.291E 01	3.213E 01	-4.854E 02	-1.145E 03	-7.187E 02	-4.260E 02	1.870E 03	2.128E 02	3.295E-02	2.077E 02	3.217E-02
4.623E 01	3.288E 01	3.210E 01	-4.853E 02	-1.147E 03	-7.199E 02	-4.268E 02	1.871E 03	2.126E 02	3.292E-02	2.076E 02	3.214E-02
4.625E 01	3.283E 01	3.205E 01	-4.838E 02	-1.150E 03	-7.220E 02	-4.284E 02	1.873E 03	2.122E 02	3.287E-02	2.073E 02	3.209E-02
4.626E 01	3.280E 01	3.203E 01	-4.834E 02	-1.152E 03	-7.232E 02	-4.293E 02	1.874E 03	2.121E 02	3.284E-02	2.071E 02	3.207E-02
4.731E 01	2.981E 01	2.937E 01	-4.241E 02	-1.398E 03	-8.424E 02	-5.554E 02	2.004E 03	1.928E 02	2.985E-02	1.899E 02	2.940E-02
4.811E 01	2.877E 01	2.734E 01	-3.583E 02	-1.604E 03	-9.281E 02	-6.758E 02	2.103E 03	1.861E 02	2.881E-02	1.768E 02	2.737E-02
4.876E 01	2.570E 01	2.570E 01	-2.795E 02	-1.766E 03	-9.940E 02	-7.736E 02	2.184E 03	1.662E 02	2.573E-02	1.662E 02	2.573E-02
5.020E 01	1.585E 01	1.585E 01	-1.253E 02	-2.066E 03	-1.130E 03	-9.357E 02	2.363E 03	1.025E 02	1.587E-02	1.025E 02	1.587E-02
5.021E 01	1.578E 01	1.578E 01	-1.245E 02	-2.068E 03	-1.131E 03	-9.365E 02	2.365E 03	1.020E 02	1.580E-02	1.020E 02	1.580E-02
5.074E 01	1.216E 01	1.216E 01	-8.588E 01	-2.146E 03	-1.178E 03	-9.679E 02	2.431E 03	7.861E 01	1.217E-02	7.861E 01	1.217E-02
5.215E 01	1.099E 01	1.099E 01	-3.196E-01	-2.331E 03	-1.292E 03	-1.039E 03	2.609E 03	7.104E 01	1.100E-02	7.104E 01	1.100E-02
5.425E 01	7.375E 00	7.375E 00	1.008E 02	-2.577E 03	-1.438E 03	-1.139E 03	2.875E 03	4.768E 01	7.384E-03	4.768E 01	7.384E-03
5.475E 01	7.858E 00	7.858E 00	1.206E 02	-2.627E 03	-1.468E 03	-1.158E 03	2.939E 03	5.081E 01	7.868E-03	5.081E 01	7.868E-03
5.550E 01	6.625E 00	6.625E 00	1.486E 02	-2.695E 03	-1.511E 03	-1.184E 03	3.035E 03	4.283E 01	6.633E-03	4.283E 01	6.633E-03
5.576E 01	6.192E 00	6.192E 00	1.572E 02	-2.716E 03	-1.525E 03	-1.193E 03	3.068E 03	4.004E 01	6.200E-03	4.004E 01	6.200E-03
5.626E 01	3.725E 00	5.375E 00	2.310E 02	-2.760E 03	-1.551E 03	-1.209E 03	3.102E 03	2.408E 01	3.730E-03	3.475E 01	5.382E-03
5.768E 01	5.537E 00	5.537E 00	2.698E 02	-2.869E 03	-1.620E 03	-1.249E 03	3.209E 03	3.580E 01	5.544E-03	3.580E 01	5.544E-03
5.774E 01	6.575E 00	5.543E 00	2.714E 02	-2.873E 03	-1.623E 03	-1.250E 03	3.217E 03	4.251E 01	6.583E-03	3.584E 01	5.550E-03
5.788E 01	6.575E 00	5.559E 00	2.750E 02	-2.882E 03	-1.629E 03	-1.253E 03	3.234E 03	4.251E 01	6.583E-03	3.594E 01	5.566E-03
5.796E 01	5.568E 00	5.566E 00	2.773E 02	-2.887E 03	-1.632E 03	-1.255E 03	3.245E 03	3.600E 01	5.575E-03	3.600E 01	5.575E-03
5.824E 01	5.600E 00	5.600E 00	2.846E 02	-2.905E 03	-1.644E 03	-1.261E 03	3.280E 03	3.621E 01	5.607E-03	3.621E 01	5.607E-03
5.846E 01	4.892E 00	4.892E 00	2.897E 02	-2.919E 03	-1.653E 03	-1.266E 03	3.309E 03	3.163E 01	4.898E-03	3.163E 01	4.898E-03
5.919E 01	2.625E 00	2.625E 00	2.998E 02	-2.958E 03	-1.679E 03	-1.280E 03	3.402E 03	1.697E 01	2.628E-03	1.697E 01	2.628E-03
6.021E 01	7.725E 00	7.725E 00	3.118E 02	-3.008E 03	-1.709E 03	-1.299E 03	3.532E 03	4.995E 01	7.735E-03	4.995E 01	7.735E-03
6.222E 01	1.049E 01	1.049E 01	3.140E 02	-3.106E 03	-1.754E 03	-1.352E 03	3.790E 03	6.781E 01	1.050E-02	6.781E 01	1.050E-02
6.364E 01	9.231E 00	9.231E 00	3.140E 02	-3.180E 03	-1.780E 03	-1.400E 03	3.972E 03	5.969E 01	9.243E-03	5.969E 01	9.243E-03

READING = 0098 BLOCK = 208 TIME = 305.701 MACH 7.3 PT = 998.749 TT = 3085.7

XABS	P-IB	P-OB	PCA	QOX	Q-IB	Q-OB	CA-ALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.610E 01	1.065E 01	1.065E 01	3.140E 02	-3.332E 03	-1.832E 03	-1.500E 03	4.289E 03	6.885E 01	1.066E-02	6.885E 01	1.066E-02
6.648E 01	1.072E 01	1.086E 01	3.140E 02	-3.356E 03	-1.841E 03	-1.517E 03	4.337E 03	6.931E 01	1.073E-02	7.025E 01	1.088E-02
6.652E 01	1.072E 01	1.089E 01	3.140E 02	-3.361E 03	-1.842E 03	-1.519E 03	4.342E 03	6.931E 01	1.073E-02	7.040E 01	1.090E-02
6.672E 01	1.016E 01	1.100E 01	3.140E 02	-3.374E 03	-1.847E 03	-1.527E 03	4.368E 03	6.571E 01	1.018E-02	7.114E 01	1.102E-02
6.838E 01	5.545E 00	4.810E 00	4.017E 02	-3.469E 03	-1.879E 03	-1.591E 03	4.584E 03	3.585E 01	5.552E-03	3.110E 01	4.816E-03
6.909E 01	4.072E 00	4.740E 00	4.987E 02	-3.502E 03	-1.889E 03	-1.614E 03	4.665E 03	2.633E 01	4.077E-03	3.065E 01	4.746E-03
6.982E 01	2.380E 00	3.523E 00	5.993E 02	-3.538E 03	-1.898E 03	-1.640E 03	4.760E 03	1.539E 01	2.383E-03	2.278E 01	3.527E-03
7.054E 01	1.871E 00	2.385E 00	6.643E 02	-3.570E 03	-1.906E 03	-1.664E 03	4.848E 03	1.210E 01	1.873E-03	1.542E 01	2.388E-03
7.115E 01	1.440E 00	2.156E 00	7.065E 02	-3.595E 03	-1.911E 03	-1.684E 03	4.922E 03	9.311E 00	1.442E-03	1.394E 01	2.159E-03
7.253E 01	8.700E-01	1.639E 00	7.749E 02	-3.640E 03	-1.921E 03	-1.719E 03	5.088E 03	5.625E 00	8.711E-04	1.060E 01	1.641E-03
7.406E 01	5.877E-01	1.065E 00	8.227E 02	-3.679E 03	-1.930E 03	-1.749E 03	5.273E 03	3.800E 00	5.884E-04	6.886E 00	1.066E-03
7.421E 01	5.600E-01	9.308E-01	8.260E 02	-3.682E 03	-1.930E 03	-1.752E 03	5.290E 03	3.621E 00	5.607E-04	6.018E 00	9.320E-04
7.496E 01	6.177E-01	2.600E-01	8.461E 02	-3.702E 03	-1.934E 03	-1.768E 03	5.374E 03	3.994E 00	6.185E-04	1.681E 00	2.603E-04
7.496E 01	6.180E-01	2.564E-01	8.467E 02	-3.702E 03	-1.934E 03	-1.768E 03	5.375E 03	3.996E 00	6.188E-04	1.658E 00	2.567E-04
7.629E 01	7.200E-01	0.000	8.608E 02	-3.741E 03	-1.939E 03	-1.802E 03	5.426E 03	4.655E 00	7.209E-04	0.000	0.000
7.914E 01	1.095E 00	0.000	8.971E 02	-3.751E 03	-1.949E 03	-1.802E 03	5.525E 03	7.080E 00	1.096E-03	0.000	0.000
8.304E 01	7.100E-01	0.000	9.357E 02	-3.760E 03	-1.958E 03	-1.802E 03	5.630E 03	4.591E 00	7.109E-04	0.000	0.000
8.585E 01	6.200E-01	0.000	9.504E 02	-3.768E 03	-1.966E 03	-1.802E 03	5.684E 03	4.009E 00	6.208E-04	0.000	0.000
8.871E 01	8.650E-01	0.000	9.684E 02	-3.783E 03	-1.981E 03	-1.802E 03	5.707E 03	5.593E 00	8.661E-04	0.000	0.000
8.871E 01	8.655E-01	0.000	9.684E 02	-3.783E 03	-1.981E 03	-1.802E 03	5.707E 03	5.596E 00	8.666E-04	0.000	0.000

READING = 0088 BLOCK = 208 TIME = 305.701 MACH 7.3 PT = 998.749 TT = 3085.7

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.475E 01	8.475E 01	2.248E-03	3.479E-02
4.041E 01	1.725E-01	8.492E 01	2.924E-03	3.499E-02
4.075E 01	5.964E 00	9.089E 01	2.510E-03	4.656E-02
4.124E 01	8.100E 00	9.899E 01	2.585E-03	3.575E-02
4.150E 01	4.342E 00	1.033E 02	2.525E-03	3.852E-02
4.246E 01	1.584E 01	1.192E 02	2.707E-03	1.940E-02
4.273E 01	4.470E 00	1.236E 02	2.663E-03	2.427E-02
4.280E 01	1.040E 00	1.247E 02	2.659E-03	2.534E-02
4.431E 01	2.246E 01	1.471E 02	3.113E-03	5.019E-02
4.480E 01	6.267E 00	1.534E 02	3.169E-03	5.412E-02
4.552E 01	8.565E 00	1.620E 02	3.291E-03	5.367E-02
4.622E 01	8.561E 00	1.705E 02	3.515E-03	5.025E-02
4.623E 01	1.209E-01	1.706E 02	3.212E-03	5.578E-02
4.625E 01	2.106E-01	1.709E 02	3.460E-03	5.293E-02
4.626E 01	1.188E-01	1.710E 02	3.141E-03	5.901E-02
4.731E 01	1.133E 01	1.823E 02	3.056E-03	5.644E-02
4.811E 01	8.181E 00	1.905E 02	3.081E-03	5.312E-02
4.876E 01	6.317E 00	1.968E 02	3.111E-03	4.896E-02
5.020E 01	1.396E 01	2.108E 02	3.240E-03	3.562E-02
5.021E 01	9.546E-02	2.109E 02	3.050E-03	3.763E-02
5.074E 01	4.876E 00	2.157E 02	2.989E-03	3.225E-02
5.215E 01	1.174E 01	2.275E 02	2.816E-03	3.032E-02
5.425E 01	1.514E 01	2.426E 02	2.860E-03	2.195E-02
5.475E 01	3.322E 00	2.459E 02	2.816E-03	2.292E-02
5.550E 01	4.807E 00	2.507E 02	2.879E-03	1.980E-02
5.576E 01	1.660E 00	2.524E 02	2.814E-03	1.915E-02
5.626E 01	1.444E 00	2.539E 02	2.666E-03	1.494E-02
5.768E 01	3.888E 00	2.577E 02	2.716E-03	1.658E-02
5.774E 01	2.514E-01	2.580E 02	2.996E-03	1.628E-02
5.788E 01	6.625E-01	2.587E 02	3.066E-03	1.594E-02
5.796E 01	4.231E-01	2.591E 02	3.568E-03	1.324E-02
5.824E 01	1.477E 00	2.606E 02	2.974E-03	1.549E-02
5.846E 01	1.098E 00	2.617E 02	2.968E-03	1.415E-02
5.919E 01	3.619E 00	2.653E 02	2.838E-03	9.402E-03
6.021E 01	4.478E 00	2.697E 02	2.589E-03	2.113E-02
6.222E 01	8.292E 00	2.780E 02	3.317E-03	1.989E-02
6.364E 01	6.741E 00	2.848E 02	3.430E-03	1.809E-02
6.610E 01	1.154E 01	2.963E 02	3.402E-03	1.926E-02
6.648E 01	1.565E 00	2.979E 02	3.559E-03	1.806E-02
6.652E 01	1.616E-01	2.981E 02	3.637E-03	1.810E-02
6.672E 01	8.188E-01	2.984E 02	3.632E-03	1.799E-02
6.838E 01	6.797E 00	3.057E 02	3.492E-03	1.271E-02
6.905E 01	2.468E 00	3.081E 02	3.463E-03	1.151E-02
6.982E 01	2.587E 00	3.107E 02	3.401E-03	8.871E-03
7.054E 01	2.051E 00	3.128E 02	3.350E-03	7.077E-03
7.115E 01	1.527E 00	3.143E 02	3.324E-03	6.276E-03
7.253E 01	2.982E 00	3.173E 02	3.268E-03	4.823E-03
7.406E 01	2.645E 00	3.199E 02	3.203E-03	3.523E-03
7.421E 01	2.103E-01	3.201E 02	3.188E-03	3.258E-03
7.496E 01	8.532E-01	3.210E 02	3.109E-03	2.165E-03
7.496E 01	1.362E-03	3.210E 02	3.109E-03	2.159E-03
7.629E 01	5.157E-01	3.215E 02	3.171E-03	3.160E-03
7.914E 01	1.289E 00	3.228E 02	3.212E-03	4.308E-03
8.304E 01	1.364E 00	3.242E 02	3.131E-03	3.067E-03
8.585E 01	5.890E-01	3.247E 02	3.098E-03	2.769E-03
8.871E 01	2.600E-01	3.250E 02	3.130E-03	3.550E-03

READING = 0088 BLOCK = 208 TIME = 305.701 MACH 7.3 PT = 998.749 TT = 3085.7

X	DDRAG	CDRAG	CF	HC
8.871E 01	0.000	3.250E 02	3.130E-03	3.552E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	630.	(LBF)
MEASURED THRUST	778.	(LBF)
CALCULATED SPECIFIC IMPULSE	1473.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	1819.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.4327	
MEASURED THRUST COEFFICIENT	0.5343	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3653.	(LBF)
NET THRUST	735.	(LBF)
SPECIFIC IMPULSE	1717.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.5044	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.7	(LBF)
INLET MOMENTUM CHANGE	-406.8	(LBF)
COMBUSTOR FRICTION DRAG	213.1	(LBF)
COMBUSTOR STRUT DRAG	-13.09	(LBF)
COMBUSTOR MOMENTUM CHANGE	410.	(LBF)
NOZZLE FRICTION DRAG	27.12	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	627.	(LBF)
NOZZLE PRESSURE INTEGRAL	654.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-728.	(LBF)
TOTAL STRUT DRAG	-13.09	(LBF)
CAVITY FORCE	-527.	(LBF)
CALCULATED LOAD CELL FORCE	-625.	(LBF)
MEASURED LOAD CELL FORCE	-477.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, -150.0, -120.2,

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7369	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.621	(IN)
NOZZLE SHROUD TRAILING EDGE	74.961	(IN)
NOZZLE PLUG TRAILING EDGE	88.713	(IN)
STRUT LEADING EDGE	57.877	(IN)
STRUT TRAILING EDGE	66.477	(IN)
COMBUSTOR EXIT	66.477	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9880	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1014	
DELTA PT2	0.0901	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3212	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1027	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9030	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9132	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9324	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8836	
ENTHALPY AT P0 - SUPERSONIC	-33.69	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	3.09	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0283
EQUIVALENCE RATIO	0.903
COMBUSTOR EFFICIENCY	0.762
TOTAL PRESSURE RATIO	0.0721
COMBUSTOR EFFECTIVENESS	0.7188

INJECTOR DISCHARGE COEFFICIENTS 0.9193, 0.8415, 1.0564, 0.8354

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9368
NOZZLE COEFFICIENT - CT	0.8554
PROCESS EFFICIENCY	0.8391
KINETIC ENERGY EFFICIENCY	0.8573

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.722	
1C	44.300	
2A	50.197	D
2C	46.250	E
3A	55.487	
3B	57.672	
4	46.222	C

Reading 89

t = 250.77 sec.

RAMJET PERFORMANCE

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S U M M A R Y R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	8	W/A	W	A/AC	MOPTM	G	IVAC	PHI	ETAC
WIND TUNNEL 1 0 5																	
0.000	989.499	1794	321.9(451)	1.3340	28.908	2029											
0.000	0.155	158	-91.8(37)	1.3892	28.908	614	7.415	4550	1.660	0.08395	21.307	0.9909	3053	5.936	143.3		
SPIKE TIP NS 2 0 5																	
0.600	11.262	1794	321.9(451)	1.3340	28.908	2029											
0.600	10.223	1751	310.1(439)	1.3359	28.906	2006	0.383	769	1.968	0.08395	21.307	0.9909	3104	1.003	145.7		
WIND TUNNEL 3 0 0																	
0.000	989.499	1794	321.9(451)	1.3340	28.908	2029											
0.000	0.160	159	-91.5(38)	1.3893	28.908	616	7.381	4548	1.660	0.08570	21.751	0.9909	3115	6.057	143.2		
SPIKE TIP NS 4 0 0																	
0.600	11.262	1794	321.9(451)	1.3340	28.908	2029											
0.600	10.178	1749	309.5(439)	1.3360	28.908	2004	0.393	787	1.968	0.08570	21.751	0.9909	3115	1.048	143.2		
INLET THROAT 5 0 3																	
40.400	319.406	1750	309.9(439)	1.3359	28.908	2005											
40.400	10.749	702	39.9(169)	1.3942	28.908	1297	2.833	3675	1.731	1.05315	21.307	0.0790	2651	60.150	124.4		
INLET UPNRSK 6 0 3																	
40.400	319.406	1750	309.9(439)	1.3359	28.908	2005											
40.400	9.242	672	32.8(162)	1.3952	28.908	1270	2.931	3723	1.731	0.95742	21.307	0.0869	2671	55.399	125.4		
INLET DNNRSK 7 0 4																	
40.400	106.921	1750	309.9(439)	1.3359	28.908	2005											
40.400	92.193	1686	292.4(421)	1.3388	28.908	1970	0.475	936	1.807	0.95742	21.307	0.0869	2671	13.924	125.4		
COMBUSTOR 0 8 1 3																	
40.410	319.122	1750	309.8(439)	1.3359	28.908	2005											
40.410	10.752	702	40.0(169)	1.3942	28.908	1297	2.832	3675	1.731	1.05301	21.307	0.0790	2651	60.134	124.4		
COMBUSTOR 0 9 2 3																	
40.727	311.845	1746	308.8(438)	1.3360	28.908	2003											
40.727	10.943	708	41.6(171)	1.3939	28.908	1303	2.806	3657	1.732	1.05683	21.307	0.0787	2643	60.066	124.0		
COMBUSTOR 0 10 3 4																	
41.217	284.864	1741	307.3(436)	1.3363	28.908	2000											
41.217	11.384	732	47.4(176)	1.3930	28.908	1324											
							2.723	3607	1.738	1.04900	21.307	0.0793	2620	58.797	123.0		
COMBUSTOR 0 11 4 4																	
41.500	261.019	1737	306.4(435)	1.3364	28.908	1998											
41.500	11.800	757	53.3(182)	1.3919	28.908	1346	2.645	3559	1.743	1.03848	21.307	0.0801	2599	57.439	122.0		
COMBUSTOR 0 12 5 5																	
42.460	211.151	1726	303.4(432)	1.3369	28.908	1992											
42.460	12.206	805	65.1(194)	1.3897	28.908	1387	2.490	3453	1.756	0.97969	21.307	0.0849	2552	52.572	119.8		
COMBUSTOR 0 13 6 5																	
42.712	204.307	1723	302.6(432)	1.3371	28.908	1991											
42.712	12.204	811	66.6(196)	1.3894	28.908	1392	2.469	3437	1.758	0.96777	21.307	0.0860	2545	51.688	119.4		
COMBUSTOR 0 14 7 5																	
42.777	202.718	1723	302.4(431)	1.3371	28.908	1990											
42.777	12.212	812	66.9(196)	1.3893	28.908	1393	2.464	3433	1.758	0.96537	21.307	0.0862	2543	51.497	119.3		
COMBUSTOR 0 15 8 5																	
44.310	171.063	1707	298.1(427)	1.3378	28.908	1982											
44.310	11.908	837	73.1(202)	1.3881	28.908	1414	2.373	3356	1.768	0.89280	21.307	0.0932	2507	46.561	117.6		
COMBUSTOR 0 16 9 4																	
44.800	164.725	1702	296.9(426)	1.3380	28.908	1979											
44.800	11.922	844	74.7(204)	1.3877	28.908	1419	2.349	3334	1.769	0.88117	21.307	0.0944	2496	45.658	117.2		
COMBUSTOR 0 17 10 4																	
45.497	158.882	1696	295.1(424)	1.3383	28.908	1976											
45.497	12.037	851	76.5(206)	1.3874	28.908	1425	2.321	3307	1.771	0.87505	21.307	0.0951	2483	44.975	116.6		
COMBUSTOR 0 18 11 4																	
46.212	153.423	1689	293.4(422)	1.3366	28.908	1972											
46.212	11.734	850	76.2(205)	1.3874	28.908	1424	2.315	3297	1.772	0.85148	21.307	0.0977	2477	43.625	116.2		

	P	T	H		GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12	4														
46.260	152.992	1689	293.3(	422)	1.3386	28.908	1972											
46.260	11.693	850	76.1(	205)	1.3874	28.908	1424	2.315	3297	1.772	0.84888	21.307	0.0980	2477	43.491	116.2		
COMBUSTOR	0	20	13	4														
46.937	146.202	1684	292.0(	421)	1.3369	28.908	1969											
46.937	11.067	845	74.9(	204)	1.3877	28.908	1420	2.321	3296	1.775	0.80790	21.307	0.1030	2475	41.384	116.1		
COMBUSTOR	0	21	14	4														
47.310	142.485	1682	291.4(	420)	1.3390	28.908	1968											
47.310	10.756	843	74.4(	203)	1.3878	28.908	1418	2.323	3295	1.776	0.78671	21.307	0.1057	2473	40.285	116.1		
COMBUSTOR	0	22	15	4														
48.110	136.691	1677	290.1(	419)	1.3392	28.908	1965											
48.110	9.570	823	69.5(	199)	1.3888	28.908	1402	2.370	3323	1.778	0.72318	21.307	0.1150	2482	37.342	116.5		
COMBUSTOR	0	23	16	3														
48.737	133.268	1674	289.1(	418)	1.3394	28.908	1963											
48.737	8.306	794	62.5(	192)	1.3902	28.908	1378											
								2.443	3367	1.779	0.65870	21.307	0.1263	2498	34.467	117.3		
COMBUSTOR	0	24	17	4														
50.187	126.151	1666	287.0(	416)	1.3397	28.908	1959											
50.187	6.084	735	48.1(	177)	1.3928	28.908	1327	2.605	3457	1.782	0.53530	21.307	0.1554	2532	28.762	118.8		
COMBUSTOR	0	25	18	4														
50.717	122.612	1663	286.3(	415)	1.3399	28.908	1958											
50.717	5.546	721	44.6(	174)	1.3934	28.908	1314	2.646	3478	1.783	0.50064	21.307	0.1662	2539	27.059	119.2		
COMBUSTOR	0	26	19	4														
52.127	114.284	1658	284.8(	414)	1.3401	28.908	1955											
52.127	4.459	689	36.8(	166)	1.3947	28.908	1285	2.741	3523	1.787	0.42669	21.307	0.1950	2556	23.360	119.9		
COMBUSTOR	0	27	20	5														
54.227	102.544	1651	282.9(	412)	1.3405	28.908	1951											
54.227	3.447	657	29.1(	158)	1.3957	28.908	1256	2.837	3564	1.794	0.34972	21.307	0.2379	2570	19.367	120.6		
COMBUSTOR	0	28	21	4														
54.727	99.883	1649	282.5(	412)	1.3406	28.908	1950											
54.727	3.273	652	27.8(	157)	1.3959	28.908	1251	2.854	3570	1.795	0.33542	21.307	0.2480	2572	18.609	120.7		
COMBUSTOR	0	29	22	5														
55.477	96.812	1647	282.0(	411)	1.3406	28.908	1949											
55.477	3.032	643	25.6(	155)	1.3962	28.908	1242	2.883	3582	1.797	0.31619	21.307	0.2631	2576	17.600	120.9		
COMBUSTOR	0	30	23	5														
55.760	95.615	1647	281.8(	411)	1.3407	28.908	1949											
55.760	2.952	640	24.9(	154)	1.3963	28.908	1239	2.893	3585	1.798	0.30954	21.307	0.2688	2578	17.247	121.0		
COMBUSTOR	0	31	24	5														
56.237	83.222	1645	281.5(	411)	1.3407	28.908	1948											
56.237	2.204	612	18.2(	147)	1.3971	28.908	1213	2.993	3630	1.807	0.24461	21.307	0.3401	2596	13.798	121.8		
COMBUSTOR	0	32	25	4														
57.662	80.901	1642	280.6(	410)	1.3409	28.908	1946											
57.662	1.977	597	14.5(	144)	1.3974	28.908	1198	3.047	3649	1.809	0.22617	21.307	0.3678	2603	12.825	122.2		
COMBUSTOR	0	33	26	4														
57.717	80.775	1642	280.6(	410)	1.3409	28.908	1946											
57.717	1.969	596	14.4(	143)	1.3975	28.908	1197	3.048	3650	1.809	0.22545	21.307	0.3690	2603	12.787	122.2		
COMBUSTOR	0	34	27	4														
57.857	80.499	1642	280.5(	410)	1.3409	28.908	1946											
57.857	1.951	595	14.1(	143)	1.3975	28.908	1196	3.052	3651	1.809	0.22387	21.307	0.3716	2603	12.702	122.2		
COMBUSTOR	0	35	28	4														
57.937	81.567	1642	280.4(	410)	1.3409	28.908	1946											
57.937	1.971	595	14.0(	143)	1.3975	28.908	1196	3.054	3651	1.808	0.22642	21.307	0.3674	2604	12.848	122.2		
COMBUSTOR	0	36	29	4														
58.217	81.765	1641	280.3(	409)	1.3410	28.908	1946											
58.217	1.958	593	13.6(	143)	1.3975	28.908	1194	3.060	3653	1.808	0.22567	21.307	0.3686	2604	12.813	122.2		
COMBUSTOR	0	37	30	4														
58.443	81.953	1641	280.2(	409)	1.3410	28.908	1945											
58.443	1.949	592	13.3(	142)	1.3976	28.908	1192											
								3.065	3655	1.807	0.22528	21.307	0.3693	2605	12.796	122.2		

READING = 0089 BLOCK = 70 TIME = 250.773 MACH 7.4 PT = 989.499 TT = 1793.9

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOPTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	38	31 4														
59.167	81.458	1640	279.9(409)	1.3410	28.908	1945											
59.167	1.906	588	12.5(142)	1.3976	28.908	1189	3.076	3658	1.808	0.22167	21.307	0.3753	2606	12.601	122.3		
COMBUSTOR	0	39	32 4														
60.187	81.092	1638	279.4(409)	1.3411	28.908	1944											
60.187	1.890	587	12.2(141)	1.3977	28.908	1188	3.078	3657	1.808	0.22026	21.307	0.3777	2605	12.518	122.2		
COMBUSTOR	0	40	33 5														
62.197	81.308	1636	278.9(408)	1.3412	28.908	1943											
62.197	1.989	594	13.9(143)	1.3975	28.908	1195	3.046	3641	1.807	0.22792	21.307	0.3650	2597	12.898	121.9		
COMBUSTOR	0	41	34 5														
63.617	81.427	1635	278.7(408)	1.3412	28.908	1942											
63.617	2.071	601	15.5(145)	1.3973	28.908	1202	3.020	3629	1.807	0.23410	21.307	0.3553	2592	13.204	121.6		
COMBUSTOR	0	42	35 4														
66.081	73.972	1633	278.2(407)	1.3413	28.908	1941											
66.081	2.010	611	18.0(147)	1.3971	28.908	1212	2.977	3608	1.813	0.22190	21.307	0.3749	2583	12.443	121.2		
COMBUSTOR	0	43	36 4														
66.457	68.347	1633	278.1(407)	1.3413	28.908	1941											
66.457	1.875	613	18.4(147)	1.3970	28.908	1214	2.971	3605	1.819	0.20630	21.307	0.4032	2581	11.558	121.1		
NOZZLE AE		44	37 3														
88.693	68.347	1633	278.1(407)	1.3413	28.908	1941											
88.693	0.176	312	-54.1(75)	1.3969	28.908	866	4.707	4078	1.819	0.04294	21.307	1.9371	2788	2.721	130.8		
NOZZLE PQ		45	38 3														
88.693	68.347	1633	278.1(407)	1.3413	28.908	1941											
88.693	0.155	302	-56.7(72)	1.3965	28.908	851	4.810	4093	1.819	0.03947	21.307	2.1075	2795	2.511	131.2		
FICTIVE COMBUSTR		63	56 0														
66.457	319.406	1633	278.1(407)	1.3413	28.908	1941											
66.457	0.155	195	-82.6(46)	1.3916	28.908	683	6.219	4249	1.713	0.06335	21.307	1.3131	2866	4.183	134.5		
FICTIVE NOZZLE		64	57 0														
88.693	113.851	1632	277.8(407)	1.3414	28.908	1940											
88.693	0.139	253	-68.6(61)	1.3946	28.908	779	5.346	4163	1.783	0.04294	21.307	1.9371	2826	2.778	132.6		

READING = 0089 BLOCK = 70 TIME = 250.775 MACH 7.4 PT = 989.499 TT = 1793.9

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/P80	P-IB/PTO	P-OB/P80	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.714E-01	0.000	0.000	0.000	2.470E-02	4.439E 00	6.973E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.439E 00	6.973E-04	0.000	0.000
3.070E 01	1.155E 00	0.000	-9.775E 01	0.000	0.000	0.000	5.053E 02	7.430E 00	1.167E-03	0.000	0.000
3.508E 01	2.026E 00	0.000	-2.008E 02	0.000	0.000	0.000	6.804E 02	1.304E 01	2.048E-03	0.000	0.000
3.555E 01	2.250E 00	0.000	-2.203E 02	0.000	0.000	0.000	7.013E 02	1.447E 01	2.274E-03	0.000	0.000
3.606E 01	2.035E 00	0.000	-2.421E 02	-8.123E 01	-8.123E 01	0.000	7.246E 02	1.309E 01	2.057E-03	0.000	0.000
3.648E 01	2.256E 00	0.000	-2.604E 02	-8.320E 01	-8.320E 01	0.000	7.443E 02	1.451E 01	2.280E-03	0.000	0.000
3.659E 01	2.270E 00	2.878E 00	-2.957E 02	-8.375E 01	-8.375E 01	0.000	7.497E 02	1.460E 01	2.294E-03	1.851E 01	2.908E-03
3.660E 01	2.270E 00	2.899E 00	-2.958E 02	-8.378E 01	-8.378E 01	0.000	7.500E 02	1.461E 01	2.294E-03	1.865E 01	2.930E-03
3.701E 01	2.320E 00	4.351E 00	-2.982E 02	-8.580E 01	-8.580E 01	0.000	7.924E 02	1.492E 01	2.345E-03	2.799E 01	4.397E-03
3.727E 01	2.228E 00	5.262E 00	-2.971E 02	-8.711E 01	-8.711E 01	0.000	8.194E 02	1.433E 01	2.252E-03	3.385E 01	5.318E-03
3.803E 01	1.955E 00	8.310E 00	-2.785E 02	-9.124E 01	-9.124E 01	0.000	9.015E 02	1.258E 01	1.976E-03	5.346E 01	8.398E-03
3.873E 01	6.482E 00	1.109E 01	-2.768E 02	-1.516E 02	-9.602E 01	-5.563E 01	9.792E 02	4.170E 01	6.551E-03	7.137E 01	1.121E-02
3.875E 01	6.631E 00	1.103E 01	-2.771E 02	-1.530E 02	-9.620E 01	-5.681E 01	9.818E 02	4.266E 01	6.702E-03	7.094E 01	1.114E-02
3.901E 01	8.320E 00	1.028E 01	-2.823E 02	-1.666E 02	-9.845E 01	-7.017E 01	1.011E 03	5.352E 01	8.408E-03	6.612E 01	1.039E-02
3.950E 01	1.137E 01	8.868E 00	-3.004E 02	-1.987E 02	-1.035E 02	-9.527E 01	1.067E 03	7.315E 01	1.149E-02	5.705E 01	8.962E-03
3.975E 01	1.098E 01	8.156E 00	-3.097E 02	-2.143E 02	-1.064E 02	-1.079E 02	1.096E 03	7.062E 01	1.109E-02	5.247E 01	8.243E-03
4.000E 01	1.057E 01	7.944E 00	-3.164E 02	-2.305E 02	-1.098E 02	-1.208E 02	1.125E 03	6.803E 01	1.069E-02	5.111E 01	8.029E-03
4.022E 01	1.106E 01	7.762E 00	-3.220E 02	-2.446E 02	-1.129E 02	-1.318E 02	1.150E 03	7.114E 01	1.118E-02	4.994E 01	7.845E-03
4.040E 01	1.146E 01	8.931E 00	-3.265E 02	-2.566E 02	-1.156E 02	-1.411E 02	1.172E 03	7.376E 01	1.159E-02	5.746E 01	9.026E-03
4.041E 01	1.149E 01	8.995E 00	-3.266E 02	-2.573E 02	-1.157E 02	-1.416E 02	1.173E 03	7.390E 01	1.161E-02	5.787E 01	9.090E-03
4.073E 01	1.219E 01	1.102E 01	-3.309E 02	-2.782E 02	-1.206E 02	-1.576E 02	1.210E 03	7.844E 01	1.232E-02	7.089E 01	1.114E-02
4.122E 01	1.328E 01	1.900E 00	-3.472E 02	-3.108E 02	-1.288E 02	-1.820E 02	1.268E 03	8.545E 01	1.342E-02	1.222E 01	1.920E-03
4.150E 01	1.391E 01	1.953E 00	-3.641E 02	-3.297E 02	-1.340E 02	-1.957E 02	1.301E 03	8.950E 01	1.406E-02	1.256E 01	1.973E-03
4.246E 01	6.700E 00	2.132E 00	-3.984E 02	-3.949E 02	-1.527E 02	-2.422E 02	1.415E 03	4.310E 01	6.771E-03	1.371E 01	2.154E-03
4.271E 01	6.993E 00	2.179E 00	-4.027E 02	-4.115E 02	-1.578E 02	-2.538E 02	1.445E 03	4.499E 01	7.068E-03	1.401E 01	2.202E-03
4.278E 01	7.069E 00	2.191E 00	-4.038E 02	-4.156E 02	-1.590E 02	-2.566E 02	1.453E 03	4.548E 01	7.144E-03	1.409E 01	2.214E-03
4.431E 01	8.854E 00	5.447E 00	-4.210E 02	-5.063E 02	-1.873E 02	-3.190E 02	1.638E 03	5.696E 01	8.948E-03	3.504E 01	5.505E-03
4.480E 01	9.425E 00	6.488E 00	-4.254E 02	-5.336E 02	-1.955E 02	-3.381E 02	1.697E 03	6.063E 01	9.525E-03	4.174E 01	6.557E-03
4.550E 01	9.314E 00	7.969E 00	-4.301E 02	-5.719E 02	-2.067E 02	-3.652E 02	1.782E 03	5.992E 01	9.413E-03	5.126E 01	8.053E-03
4.621E 01	9.200E 00	7.463E 00	-4.282E 02	-6.077E 02	-2.177E 02	-3.900E 02	1.870E 03	5.919E 01	9.298E-03	4.801E 01	7.542E-03
4.626E 01	9.192E 00	7.429E 00	-4.278E 02	-6.099E 02	-2.184E 02	-3.914E 02	1.876E 03	5.914E 01	9.290E-03	4.779E 01	7.508E-03
4.694E 01	9.084E 00	6.950E 00	-4.222E 02	-6.371E 02	-2.284E 02	-4.087E 02	1.959E 03	5.844E 01	9.181E-03	4.471E 01	7.024E-03
4.731E 01	9.025E 00	7.064E 00	-4.195E 02	-6.503E 02	-2.337E 02	-4.166E 02	2.005E 03	5.806E 01	9.121E-03	4.544E 01	7.139E-03
4.811E 01	5.275E 00	7.308E 00	-4.023E 02	-6.782E 02	-2.447E 02	-4.335E 02	2.104E 03	3.394E 01	5.331E-03	4.702E 01	7.386E-03
4.874E 01	7.500E 00	7.500E 00	-3.803E 02	-6.998E 02	-2.529E 02	-4.468E 02	2.182E 03	4.825E 01	7.580E-03	4.825E 01	7.580E-03
5.019E 01	4.571E 00	4.571E 00	-3.352E 02	-7.445E 02	-2.707E 02	-4.738E 02	2.364E 03	2.940E 01	4.619E-03	2.940E 01	4.619E-03
5.072E 01	3.500E 00	3.500E 00	-3.240E 02	-7.584E 02	-2.768E 02	-4.816E 02	2.430E 03	2.252E 01	3.537E-03	2.252E 01	3.537E-03
5.213E 01	3.287E 00	3.287E 00	-2.989E 02	-7.914E 02	-2.917E 02	-4.997E 02	2.608E 03	2.115E 01	3.322E-03	2.115E 01	3.322E-03
5.423E 01	1.300E 00	1.300E 00	-2.737E 02	-8.316E 02	-3.108E 02	-5.208E 02	2.874E 03	8.363E 00	1.314E-03	8.363E 00	1.314E-03
5.473E 01	2.125E 00	2.125E 00	-2.692E 02	-8.397E 02	-3.148E 02	-5.248E 02	2.938E 03	1.367E 01	2.148E-03	1.367E 01	2.148E-03
5.548E 01	1.752E 00	1.752E 00	-2.617E 02	-8.510E 02	-3.204E 02	-5.306E 02	3.033E 03	1.127E 01	1.771E-03	1.127E 01	1.771E-03
5.576E 01	1.612E 00	1.612E 00	-2.593E 02	-8.551E 02	-3.224E 02	-5.327E 02	3.070E 03	1.037E 01	1.629E-03	1.037E 01	1.629E-03
5.624E 01	9.750E-01	1.375E 00	-2.402E 02	-8.618E 02	-3.257E 02	-5.361E 02	3.102E 03	6.272E 00	9.853E-04	8.846E 00	1.390E-03
5.766E 01	1.321E 00	1.321E 00	-2.306E 02	-8.801E 02	-3.345E 02	-5.456E 02	3.209E 03	8.498E 00	1.335E-03	8.498E 00	1.335E-03
5.772E 01	1.400E 00	1.319E 00	-2.302E 02	-8.807E 02	-3.348E 02	-5.459E 02	3.217E 03	9.006E 00	1.415E-03	8.485E 00	1.333E-03
5.786E 01	1.400E 00	1.314E 00	-2.293E 02	-8.824E 02	-3.356E 02	-5.468E 02	3.234E 03	9.006E 00	1.415E-03	8.451E 00	1.328E-03
5.794E 01	1.311E 00	1.311E 00	-2.288E 02	-8.833E 02	-3.360E 02	-5.473E 02	3.245E 03	8.431E 00	1.325E-03	8.431E 00	1.325E-03
5.822E 01	1.300E 00	1.300E 00	-2.271E 02	-8.864E 02	-3.374E 02	-5.489E 02	3.280E 03	8.363E 00	1.314E-03	8.363E 00	1.314E-03
5.844E 01	1.312E 00	1.312E 00	-2.258E 02	-8.888E 02	-3.385E 02	-5.502E 02	3.309E 03	8.440E 00	1.326E-03	8.440E 00	1.326E-03
5.917E 01	1.350E 00	1.350E 00	-2.222E 02	-8.959E 02	-3.418E 02	-5.541E 02	3.402E 03	8.685E 00	1.364E-03	8.685E 00	1.364E-03
6.019E 01	1.200E 00	1.200E 00	-2.193E 02	-9.046E 02	-3.457E 02	-5.589E 02	3.532E 03	7.720E 00	1.213E-03	7.720E 00	1.213E-03
6.220E 01	7.125E-01	7.125E-01	-2.191E 02	-9.198E 02	-3.508E 02	-5.649E 02	3.790E 03	4.584E 00	7.201E-04	4.584E 00	7.201E-04
6.362E 01	1.169E 00	1.169E 00	-2.191E 02	-9.211E 02	-3.530E 02	-5.681E 02	3.972E 03	7.519E 00	1.181E-03	7.519E 00	1.181E-03
6.608E 01	1.320E 00	1.320E 00	-2.191E 02	-9.309E 02	-3.548E 02	-5.761E 02	4.289E 03	8.490E 00	1.334E-03	8.490E 00	1.334E-03
6.646E 01	1.400E 00	1.343E 00	-2.191E 02	-9.323E 02	-3.549E 02	-5.774E 02	4.337E 03	9.006E 00	1.415E-03	8.638E 00	1.397E-03

READING = 0089 BLOCK = 70 TIME = 250.775 MACH 7.4 PT = 989.499 TT = 1793.9

XABR	P-IB	P-OB	PDA	QDA	Q-IB	Q-OB	CAXALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.650E 01	1.400E 00	1.345E 00	-2.191E 02	-9.325E 02	-3.549E 02	-5.776E 02	4.342E 03	9.006E 00	1.415E-03	6.654E 00	1.360E-03
6.670E 01	1.354E 00	1.357E 00	-2.191E 02	-9.333E 02	-3.549E 02	-5.783E 02	4.368E 03	[illegible] 00	1.369E-03	6.733E 00	1.372E-03
6.836E 01	9.750E-01	1.126E 00	-2.056E 02	-9.391E 02	-3.557E 02	-5.834E 02	4.584E 03	6.272E 00	9.853E-04	7.244E 00	1.138E-03
6.980E 01	8.600E-01	9.254E-01	-1.591E 02	-9.434E 02	-3.570E 02	-5.864E 02	4.761E 03	5.533E 00	8.691E-04	5.953E 00	9.352E-04
7.052E 01	7.220E-01	8.250E-01	-1.374E 02	-9.456E 02	-3.577E 02	-5.878E 02	4.849E 03	4.644E 00	7.296E-04	5.307E 00	8.338E-04
7.113E 01	6.050E-01	8.042E-01	-1.214E 02	-9.472E 02	-3.583E 02	-5.888E 02	4.923E 03	3.892E 00	6.114E-04	5.174E 00	8.127E-04
7.251E 01	6.100E-01	7.572E-01	-8.971E 01	-9.487E 02	-3.596E 02	-5.891E 02	5.089E 03	3.924E 00	6.165E-04	4.871E 00	7.652E-04
7.404E 01	6.146E-01	7.050E-01	-5.781E 01	-9.472E 02	-3.607E 02	-5.865E 02	5.273E 03	3.954E 00	6.211E-04	4.535E 00	7.125E-04
7.419E 01	6.150E-01	6.667E-01	-5.498E 01	-9.466E 02	-3.608E 02	-5.861E 02	5.291E 03	3.956E 00	6.215E-04	4.289E 00	6.737E-04
7.494E 01	6.258E-01	4.750E-01	-3.496E 01	-9.446E 02	-3.612E 02	-5.834E 02	5.375E 03	4.026E 00	6.325E-04	3.056E 00	4.800E-04
7.494E 01	6.259E-01	4.740E-01	-3.404E 01	-9.446E 02	-3.612E 02	-5.834E 02	5.375E 03	4.026E 00	6.325E-04	3.049E 00	4.790E-04
7.627E 01	6.450E-01	0.000	-2.062E 01	-9.395E 02	-3.617E 02	-5.778E 02	5.427E 03	4.149E 00	6.518E-04	0.000	0.000
7.912E 01	4.700E-01	0.000	1.675E 00	-9.403E 02	-3.625E 02	-5.778E 02	5.525E 03	3.024E 00	4.750E-04	0.000	0.000
8.302E 01	4.400E-01	0.000	2.112E 01	-9.407E 02	-3.629E 02	-5.778E 02	5.630E 03	2.831E 00	4.447E-04	0.000	0.000
8.583E 01	3.850E-01	0.000	3.029E 01	-9.408E 02	-3.630E 02	-5.778E 02	5.685E 03	2.477E 00	3.891E-04	0.000	0.000
8.869E 01	5.300E-01	0.000	4.133E 01	-9.409E 02	-3.632E 02	-5.778E 02	5.707E 03	3.410E 00	5.356E-04	0.000	0.000
8.869E 01	5.303E-01	0.000	4.133E 01	-9.409E 02	-3.632E 02	-5.778E 02	5.707E 03	3.412E 00	5.359E-04	0.000	0.000

READING = 0089 BLOCK = 70 TIME = 250.775 MACH 7.4 PT = 989.499 TT = 1793.9

X	DDRAG	CDRAG	CF	HC
4.040E 01	7.512E 01	7.512E 01	1.872E-03	3.819E-02
4.041E 01	1.321E-01	7.525E 01	1.872E-03	3.822E-02
4.073E 01	4.190E 00	7.944E 01	1.885E-03	3.864E-02
4.122E 01	6.525E 00	8.597E 01	1.926E-03	3.923E-02
4.150E 01	3.779E 00	8.975E 01	1.966E-03	3.970E-02
4.246E 01	1.261E 01	1.024E 02	2.052E-03	3.925E-02
4.271E 01	3.229E 00	1.056E 02	2.064E-03	3.900E-02
4.278E 01	8.307E-01	1.064E 02	2.067E-03	3.896E-02
4.431E 01	1.896E 01	1.254E 02	2.118E-03	3.699E-02
4.480E 01	5.827E 00	1.312E 02	2.132E-03	3.678E-02
4.550E 01	8.254E 00	1.395E 02	2.149E-03	3.663E-02
4.621E 01	8.352E 00	1.478E 02	2.155E-03	3.592E-02
4.626E 01	5.494E-01	1.484E 02	2.155E-03	3.581E-02
4.694E 01	7.622E 00	1.560E 02	2.155E-03	3.406E-02
4.731E 01	4.062E 00	1.600E 02	2.154E-03	3.315E-02
4.811E 01	8.240E 00	1.683E 02	2.129E-03	3.007E-02
4.874E 01	5.909E 00	1.742E 02	2.090E-03	2.681E-02
5.019E 01	1.173E 01	1.859E 02	2.007E-03	2.083E-02
5.072E 01	3.705E 00	1.896E 02	1.987E-03	1.927E-02
5.213E 01	8.788E 00	1.984E 02	1.940E-03	1.600E-02
5.423E 01	1.091E 01	2.093E 02	1.896E-03	1.279E-02
5.473E 01	2.290E 00	2.116E 02	1.888E-03	1.222E-02
5.548E 01	3.265E 00	2.149E 02	1.875E-03	1.143E-02
5.576E 01	1.182E 00	2.161E 02	1.871E-03	1.116E-02
5.624E 01	9.211E-01	2.170E 02	1.819E-03	8.564E-03
5.766E 01	2.590E 00	2.196E 02	1.796E-03	7.816E-03
5.772E 01	1.620E-01	2.197E 02	1.795E-03	7.788E-03
5.786E 01	4.064E-01	2.201E 02	1.794E-03	7.727E-03
5.794E 01	2.342E-01	2.204E 02	1.788E-03	7.790E-03
5.822E 01	8.172E-01	2.212E 02	1.783E-03	7.740E-03
5.844E 01	6.575E-01	2.219E 02	1.779E-03	7.708E-03
5.917E 01	2.088E 00	2.239E 02	1.771E-03	7.551E-03
6.019E 01	2.904E 00	2.268E 02	1.766E-03	7.480E-03
6.220E 01	5.799E 00	2.326E 02	1.772E-03	7.763E-03
6.362E 01	4.218E 00	2.369E 02	1.776E-03	7.990E-03
6.608E 01	7.273E 00	2.441E 02	1.812E-03	7.755E-03
6.646E 01	1.056E 00	2.452E 02	1.837E-03	7.292E-03
6.650E 01	9.814E-02	2.453E 02	1.761E-03	5.745E-03
6.670E 01	4.362E-01	2.457E 02	1.758E-03	5.668E-03
6.836E 01	3.358E 00	2.491E 02	1.713E-03	4.682E-03
6.980E 01	2.382E 00	2.515E 02	1.683E-03	4.159E-03
7.052E 01	1.062E 00	2.525E 02	1.660E-03	3.717E-03
7.113E 01	8.226E-01	2.533E 02	1.645E-03	3.466E-03
7.251E 01	1.768E 00	2.551E 02	1.637E-03	3.380E-03
7.404E 01	1.909E 00	2.570E 02	1.628E-03	3.284E-03
7.419E 01	1.744E-01	2.572E 02	1.623E-03	3.213E-03
7.494E 01	8.029E-01	2.580E 02	1.600E-03	2.866E-03
7.494E 01	1.456E-03	2.580E 02	1.600E-03	2.864E-03
7.627E 01	4.928E-01	2.585E 02	1.618E-03	3.215E-03
7.912E 01	8.826E-01	2.594E 02	1.567E-03	2.528E-03
8.302E 01	8.159E-01	2.602E 02	1.547E-03	2.389E-03
8.583E 01	3.931E-01	2.606E 02	1.522E-03	2.151E-03
8.869E 01	1.744E-01	2.608E 02	1.557E-03	2.717E-03
8.869E 01	0.000	2.608E 02	1.558E-03	2.718E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-227.	(LBF)
MEASURED THRUST	-267.	(LBF)
CALCULATED SPECIFIC IMPULSE	-227.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-267.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.1493	
MEASURED THRUST COEFFICIENT	-.1753	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	0.	(LBF)
NET THRUST	0.	(LBF)
SPECIFIC IMPULSE	0.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.0000	

MOMENTUM AND FORCES

INLET FRICTION DRAG	75.1	(LBF)
INLET MOMENTUM CHANGE	-401.6	(LBF)
COMBUSTOR FRICTION DRAG	170.1	(LBF)
COMBUSTOR STRUT DRAG	7.53	(LBF)
COMBUSTOR MOMENTUM CHANGE	-70.	(LBF)
NOZZLE FRICTION DRAG	15.57	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	245.	(LBF)
NOZZLE PRESSURE INTEGRAL	260.	(LBF)
EXTERNAL FRICTION DRAG	41.19	(LBF)
EXTERNAL PRESSURE INTEGRAL	-630.	(LBF)
TOTAL EXTERNAL DRAG	-671.	(LBF)
TOTAL STRUT DRAG	7.53	(LBF)
CAVITY FORCE	-537.	(LBF)
CALCULATED LOAD CELL FORCE	-1435.	(LBF)
MEASURED LOAD CELL FORCE	-1475.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE		

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7170	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.601	(IN)
NOZZLE SHROUD TRAILING EDGE	74.941	(IN)
NOZZLE PLUG TRAILING EDGE	68.693	(IN)
STRUT LEADING EDGE	57.857	(IN)
STRUT TRAILING EDGE	66.457	(IN)
COMBUSTOR EXIT	66.457	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9909	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1066	
DELTA PT2	0.1002	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3228	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1081	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9016	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9179	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9396	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8947	
ENTHALPY AT PO - SUPERSONIC	-78.82	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-60.25	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0000
EQUIVALENCE RATIO	0.000
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.2140
COMBUSTOR EFFECTIVENESS	0.6682
INJECTOR DISCHARGE COEFFICIENTS	

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	1.0138
NOZZLE COEFFICIENT - CT	0.9836
PROCESS EFFICIENCY	1.1242
KINETIC ENERGY EFFICIENCY	1.0273

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.702	
1C	44.300	
2A	50.177	
2C	46.250	
3A	55.467	
3B	57.652	
4	46.202	

Reading 89

t = 272.37 sec.

Injected fuel did not ignite.

The first occurrance of fuel ignition occurred at time 309 seconds when fuel flow from injectors 1A and 1B was reinitiated and 1B flow "spiked" (see fig. 6 (b)).

READING = 0089 BLOCK = 94 TIME = 272.373 MACH 7.2 PT = 994.709 TT = 3175.8

2/13/75

RAMJET PERFORMANCE

S U M M A R Y R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A		A/AC	POWER	D	TVAL	PHT	ETAC
WIND TUNNEL		1	0 6														
0.000	994.749	3175	723.7(847)	1.2878	28.909	2652											
0.000	0.153	309	-55.0(74)	1.3967	28.908	861	7.247	6242	1.825	0.05801	14.727	0.9912	2896	5.627	196.7		
SPIKE TIP NS		2	0 6														
0.600	11.462	3175	723.7(847)	1.2872	28.908	2651											
0.600	10.616	3121	707.1(831)	1.2899	28.908	2630	0.347	912	2.132	0.05801	14.727	0.9912	3112	0.822	211.3		
WIND TUNNEL		3	0 0														
0.000	994.749	3175	723.7(847)	1.2878	28.909	2652											
0.000	0.173	320	-52.3(77)	1.3971	28.908	877											
							7.109	6231	1.825	0.06320	14.045	0.9912	3152	6.121	196.4		
SPIKE TIP NS		4	0 0														
0.600	11.462	3175	723.7(847)	1.2872	28.908	2651											
0.600	10.438	3109	703.4(828)	1.2894	28.908	2626	0.383	1006	2.132	0.06320	14.045	0.9912	3152	0.988	196.4		
INLET THROAT		5	0 3														
40.400	315.862	3067	690.6(815)	1.2911	28.909	2610											
40.400	10.449	1331	198.0(327)	1.3583	26.908	1764	2.815	4964	1.894	0.72878	14.727	0.0789	2484	56.225	168.6		
INLET UPNRSK		6	0 3														
40.400	315.862	3067	690.6(815)	1.2911	28.909	2610											
40.400	9.015	1280	184.8(314)	1.3614	28.908	1732	2.905	5031	1.894	0.66253	14.727	0.0868	2503	51.797	170.0		
INLET DNNRSK		7	0 4														
40.400	100.968	3067	690.6(815)	1.2911	28.908	2610											
40.400	87.960	2973	661.9(787)	1.2940	28.908	2572	0.465	1197	1.972	0.66253	14.727	0.0868	2503	12.324	170.0		
COMBUSTOR	0	8	1 21														
40.410	234.836	3011	697.6(853)	1.2946	26.974	2680											
40.410	10.607	1409	212.1(372)	1.3555	26.974	1876	2.627	4929	2.022	0.73279	14.810	0.0789	2483	56.130	167.7	0.18	0.07
COMBUSTOR	0	9	2 4														
40.731	249.551	2948	695.3(835)	1.2974	26.914	2658											
40.731	12.271	1404	228.5(371)	1.3562	26.914	1876	2.577	4833	2.012	0.73549	14.810	0.0786	2472	55.242	166.9	0.18	0.01
COMBUSTOR	0	10	3 21														
41.221	219.176	2926	691.7(828)	1.2984	26.902	2650											
41.221	8.571	1310	205.7(345)	1.3618	26.901	1816	2.716	4931	2.019	0.72994	14.810	0.0792	2444	55.940	165.0	0.18	0.00
COMBUSTOR	0	11	4 21														
41.500	201.718	2917	689.6(825)	1.2987	26.900	2646											
41.500	9.125	1357	219.4(358)	1.3591	26.899	1846	2.627	4851	2.024	0.72267	14.810	0.0800	2420	54.477	163.4	0.18	0.00
COMBUSTOR	0	12	5 21														
42.460	124.907	2895	682.5(818)	1.2994	26.899	2637											
42.460	4.871	1293	201.7(340)	1.3628	26.899	1805	2.718	4905	2.057	0.68190	14.810	0.0846	2364	51.981	159.6	0.18	0.00
COMBUSTOR	0	13	6 21														
42.706	99.893	2858	687.3(847)	1.3017	25.544	2691											
42.706	5.211	1373	218.4(381)	1.3594	25.544	1906	2.542	4844	2.157	0.67719	14.877	0.0858	2354	50.980	158.3	0.32	0.03
COMBUSTOR	0	14	7 21														
42.716	107.092	2813	687.2(833)	1.3039	25.499	2674											
42.716	5.224	1323	218.6(367)	1.3626	25.498	1875											
							2.583	4843	2.147	0.67658	14.877	0.0858	2354	50.916	158.2	0.32	0.00
COMBUSTOR	0	15	8 21														
42.781	108.133	2805	686.8(831)	1.3042	25.492	2671											
42.781	5.314	1321	220.3(367)	1.3628	25.492	1874	2.579	4832	2.145	0.67366	14.877	0.0862	2352	50.584	158.1	0.32	0.00
COMBUSTOR	0	16	9 21														
44.310	118.925	2782	679.6(823)	1.3050	25.491	2661											
44.310	10.715	1535	284.1(430)	1.3512	25.491	2011	2.212	4409	2.135	0.62301	14.877	0.0932	2313	43.072	155.5	0.32	0.00
COMBUSTOR	0	17	10 21														
44.800	117.390	2777	678.1(822)	1.3051	25.491	2659											
44.800	12.446	1598	303.2(449)	1.3480	25.490	2050	2.113	4332	2.130	0.61562	14.877	0.0943	2304	41.442	154.6	0.32	0.00
COMBUSTOR	0	18	11 21														
45.501	113.010	2796	676.2(828)	1.3041	25.515	2666											
45.501	13.511	1661	314.2(468)	1.3448	25.515	2086	2.040	4256	2.140	0.61177	14.877	0.0949	2297	40.464	154.4	0.32	0.02

READING = 0089 BLOCK = 94 TIME = 272.373 MACH 7.2 PT = 994.749 TT = 3175.3

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	F	A/AC	MOMTM	G	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.216	112.568	2768	673.8(819)	1.3054	25.494	2655											
46.216	11.476	1576	295.4(442)	1.3491	25.494	2036	2.137	4352	2.138	0.59493	14.877	0.0976	2299	40.233	154.5	0.32	0.00
COMBUSTOR	0	20	13 21														
46.250	86.596	2691	675.2(865)	1.3100	23.316	2742											
46.250	11.379	1627	308.1(500)	1.3490	23.316	2163	1.981	4286	2.306	0.59851	15.002	0.0979	2284	39.866	152.2	0.60	0.03
COMBUSTOR	0	21	14 21														
46.260	93.509	2612	675.2(838)	1.3136	23.245	2709											
46.260	11.351	1541	307.8(472)	1.3540	23.245	2113	2.029	4287	2.290	0.59414	15.002	0.0979	2284	39.854	152.2	0.60	0.01
COMBUSTOR	0	22	15 21														
46.941	88.705	2592	672.1(831)	1.3144	23.234	2700											
46.941	9.413	1475	290.4(451)	1.3574	23.234	2070	2.112	4371	2.292	0.56942	15.002	0.1029	2286	38.677	152.4	0.60	0.00
COMBUSTOR	0	23	16 21														
47.310	86.554	2585	670.2(829)	1.3147	23.233	2697											
47.310	8.994	1462	286.9(447)	1.3581	23.232	2061	2.125	4380	2.293	0.55429	15.002	0.1057	2286	37.727	152.4	0.60	0.00
COMBUSTOR	0	24	17 21														
48.110	84.687	2573	666.1(825)	1.3151	23.232	2691											
48.110	9.583	1488	295.3(455)	1.3567	23.232	2078	2.072	4307	2.293	0.50953	15.002	0.1150	2291	34.108	152.7	0.60	0.00
COMBUSTOR	0	25	18 21														
48.741	61.305	2781	662.9(895)	1.3054	23.430	2776											
48.741	7.200	1642	268.6(503)	1.3471	23.430	2166	2.050	4442	2.344	0.46379	15.002	0.1263	2304	32.015	153.6	0.60	0.08
COMBUSTOR	0	26	19 21														
50.181	58.220	2559	663.9(863)	1.3163	22.034	2757											
50.181	6.515	1473	273.9(475)	1.3584	22.034	2125	2.079	4418	2.425	0.37948	15.085	0.1552	2330	26.053	154.5	0.78	0.03
COMBUSTOR	0	27	20 21														
50.191	63.536	2483	663.9(837)	1.3198	21.970	2723											
50.191	6.510	1390	273.8(447)	1.3633	21.970	2071	2.133	4418	2.408	0.37899	15.085	0.1554	2331	26.021	154.5	0.78	0.00
COMBUSTOR	0	28	21 21														
50.721	63.248	2469	662.6(831)	1.3204	21.961	2717											
50.721	6.258	1368	270.5(440)	1.3645	21.961	2056	2.154	4429	2.406	0.35445	15.085	0.1662	2343	24.399	155.3	0.78	0.00
COMBUSTOR	0	29	22 21														
52.131	54.012	2460	660.0(828)	1.3208	21.959	2712											
52.131	3.712	1236	226.5(395)	1.3714	21.959	1959	2.378	4657	2.419	0.30209	15.085	0.1950	2369	21.865	157.0	0.78	0.00
COMBUSTOR	0	30	23 21														
54.231	35.813	2449	656.6(827)	1.3212	21.871	2712											
54.231	1.750	1120	187.1(359)	1.3773	21.871	1873	2.588	4847	2.463	0.24817	15.120	0.2379	2385	18.694	157.7	0.79	0.00
COMBUSTOR	0	31	24 21														
54.731	44.642	2442	655.9(825)	1.3215	21.867	2709											
54.731	2.825	1199	214.8(385)	1.3733	21.867	1935	2.429	4698	2.442	0.23803	15.120	0.2480	2387	17.380	157.9	0.79	0.00
COMBUSTOR	0	32	25 21														
55.481	40.395	2439	654.9(824)	1.3216	21.867	2707											
55.481	2.229	1153	199.8(369)	1.3757	21.867	1899	2.513	4772	2.450	0.22438	15.120	0.2631	2393	16.641	158.3	0.79	0.00
COMBUSTOR	0	33	26 21														
55.760	38.438	2438	654.6(823)	1.3216	21.867	2707											
55.760	2.007	1135	193.9(363)	1.3766	21.866	1885	2.547	4801	2.454	0.21972	15.120	0.2687	2394	16.394	158.4	0.79	0.00
COMBUSTOR	0	34	27 21														
56.241	28.397	2561	654.0(867)	1.3159	21.971	2762											
56.241	1.672	1243	183.9(398)	1.3700	21.971	1963	2.471	4850	2.498	0.17358	15.120	0.3401	2425	13.084	160.4	0.79	0.04
COMBUSTOR	0	35	28 21														
57.666	31.587	2451	652.5(828)	1.3209	21.882	2712											
57.666	1.427	1098	174.8(351)	1.3783	21.882	1854	2.637	4889	2.474	0.16050	15.120	0.3678	2432	12.195	160.9	0.79	0.01
COMBUSTOR	0	36	29 21														
57.721	34.453	2435	652.5(822)	1.3217	21.869	2705											
57.721	1.647	1107	183.5(354)	1.3780	21.869	1862	2.602	4845	2.464	0.15996	15.120	0.3691	2432	12.043	160.9	0.79	0.00
COMBUSTOR	0	37	30 21														
57.861	34.461	2432	652.3(821)	1.3218	21.867	2704											
57.861	1.637	1103	183.2(353)	1.3782	21.867	1859	2.606	4845	2.464	0.15887	15.120	0.3716	2433	11.962	160.9	0.79	0.00

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                  P      T      H          GAMMA  MOLWT  SONV MACH  VEL  S     V/A     [illegible] A/AC  PUMIP  G     IVAC  PHI  ETAC
COMBUSTOR          0   35   31  21
57.941     32.270 2436   652.3( 823) 1.3216 21.870 2705
57.941      1.389 1076   172.7( 344) 1.3745 21.870 1837 2.667 4899 2.470 0.16045 15.120 0.3675  2433 12.230 160.9 0.79 0.00
COMBUSTOR          0   39   32  21
58.221     32.166 2432   652.0( 821) 1.3218 21.867 2703
58.221      1.350 1066   170.8( 341) 1.3800 21.867 1829 2.663 4907 2.470 0.16020 15.120 0.3685  2434 12.217 160.9 0.79 0.00
COMBUSTOR          0   40   33  21
58.447     32.362 2431   651.6( 821) 1.3219 21.867 2703
58.447      1.362 1066   171.1( 341) 1.3800 21.867 1829 2.662 4905 2.469 0.15979 15.120 0.3695  2434 12.179 161.0 0.79 0.00
COMBUSTOR          0   41   34  21
59.171     32.663 2429   651.2( 820) 1.3219 21.867 2702
59.171      1.400 1071   172.6( 342) 1.3798 21.866 1833 2.670 4894 2.468 0.15731 15.120 0.3753  2434 11.963 161.0 0.79 0.00
COMBUSTOR          0   42   35  21
60.191     23.521 2553   650.4( 864) 1.3161 21.973 2757
60.191      1.175 1184   163.7( 379) 1.3730 21.973 1918 2.573 4935 2.514 0.15630 15.120 0.3777  2433 11.987 160.9 0.79 0.04
COMBUSTOR          0   43   36  21
62.201     26.860 2442   649.1( 825) 1.3212 21.882 2708
62.201      1.062 1054   160.2( 337) 1.3805 21.882 1818 2.720 4946 2.487 0.16174 15.120 0.3650  2424 12.432 160.3 0.79 0.01
COMBUSTOR          0   44   37  21
63.621     32.716 2424   648.2( 818) 1.3221 21.869 2699
63.621      1.512 1091   178.2( 349) 1.3788 21.869 1849 2.623 4850 2.467 0.16613 15.120 0.3553  2417 12.521 159.8 0.79 0.00
COMBUSTOR          0   45   38  21
66.085     33.441 2417   646.8( 816) 1.3223 21.867 2696
66.085      1.934 1156   200.8( 371) 1.3755 21.867 1902 2.484 4724 2.464 0.15747 15.120 0.3749  2406 11.560 159.1 0.79 0.00
COMBUSTOR          0   46   39  21
66.461     31.313 2417   646.6( 815) 1.3223 21.867 2695
66.461      1.874 1167   204.4( 374) 1.3750 21.867 1910 2.463 4704 2.470 0.14640 15.120 0.4032  2404 10.702 159.0 0.79 0.00
COMBUSTOR  REGEN  47   40   4
66.461     31.313 2492   674.7( 843) 1.3198 21.867 2734
66.461      3.288 1404   284.6( 454) 1.3628 21.867 2086 2.118 4418 2.481 0.14640 15.120 0.4032  2416 10.052 159.8 0.79 0.00
NOZZLE  AE        48   41   4
88.697     31.313 2417   646.6( 815) 1.3223 21.867 2695
88.697      0.265  676    44.3( 214) 1.3964 21.867 1465 3.748 5490 2.470 0.03047 15.120 1.9371  2711  2.600 179.3 0.79 0.00
NOZZLE  PO        49   42   4
88.697     31.313 2417   646.6( 815) 1.3223 21.867 2695
88.697      0.153  578    13.2( 183) 1.3992 21.867 1356 4.150 5630 2.470 0.02114 15.120 2.7931  2755  1.849 182.2 0.79 0.00
NOZZLE  AE REGEN  50   43   4
88.697     31.313 2492   674.7( 843) 1.3198 21.867 2734
88.697      0.273  706    54.0( 224) 1.3954 21.867 1497 3.724 5573 2.481 0.03047 15.120 1.9372  2754  2.639 182.2 0.79 0.00
NOZZLE  PO REGEN  51   44   4
88.697     31.313 2492   674.7( 843) 1.3198 21.867 2734
88.697      0.153  599    20.0( 190) 1.3986 21.867 1381 4.146 5724 2.481 0.02073 15.120 2.8475  2802  1.844 185.3 0.79 0.00
FICTIVE COMBUSTR  69   62   0
66.461    315.862 5290   646.6(1879) 1.1748 24.771 3532
66.461      0.153 1084-1084.4( 316) 1.3500 25.162 1701 5.472 9307 2.445 0.02144 15.120 2.7529  4482  3.102 296.4 0.79 1.00
FICTIVE NOZZLE    70   63   0
88.697     26.899 2396   639.0( 808) 1.3230 21.867 2685
88.697      0.284  712    56.1( 226) 1.3952 21.867 1503 3.593 5401 2.480 0.03048 15.120 1.9371  2679  2.558 177.2 0.79 0.00
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XABS	P-IA	P-OB	PCA	QUX	Q-IA	Q-OB	CAWALL	P-IB/P80	P-IA/PT0	P-OB/P80	P-OA/PT0
6.981E-01	6.900E-01	0.000	-2.768E-01	0.000	0.000	0.000	2.470E-02	4.497E 00	6.936E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.497E 00	6.936E-04	0.000	0.000
3.070E 01	1.145E 00	0.000	-9.735E 01	0.000	0.000	0.000	5.053E 02	7.462E 00	1.151E-03	0.000	0.000
3.508E 01	2.006E 00	0.000	-1.995E 02	0.000	0.000	0.000	6.804E 02	1.308E 01	2.017E-03	0.000	0.000
3.555E 01	2.180E 00	0.000	-2.185E 02	0.000	0.000	0.000	7.013E 02	1.421E 01	2.192E-03	0.000	0.000
3.606E 01	2.025E 00	0.000	-2.399E 02	-2.129E 02	-2.129E 02	0.000	7.246E 02	1.320E 01	2.036E-03	0.000	0.000
3.648E 01	2.270E 00	0.000	-2.563E 02	-2.180E 02	-2.180E 02	0.000	7.443E 02	1.479E 01	2.282E-03	0.000	0.000
3.660E 01	2.291E 00	3.221E 00	-2.972E 02	-2.195E 02	-2.195E 02	0.000	7.499E 02	1.493E 01	2.303E-03	2.099E 01	3.238E-03
3.660E 01	2.292E 00	3.239E 00	-2.972E 02	-2.196E 02	-2.196E 02	0.000	7.502E 02	1.494E 01	2.304E-03	2.111E 01	3.256E-03
3.701E 01	2.365E 00	4.477E 00	-2.988E 02	-2.248E 02	-2.248E 02	0.000	7.922E 02	1.541E 01	2.377E-03	2.918E 01	4.501E-03
3.727E 01	2.265E 00	5.278E 00	-2.978E 02	-2.283E 02	-2.283E 02	0.000	8.196E 02	1.476E 01	2.277E-03	3.438E 01	5.303E-03
3.803E 01	1.975E 00	8.320E 00	-2.798E 02	-2.391E 02	-2.391E 02	0.000	9.012E 02	1.287E 01	1.985E-03	5.422E 01	8.364E-03
3.873E 01	6.513E 00	1.113E 01	-2.779E 02	-3.245E 02	-2.517E 02	-7.277E 01	9.794E 02	4.245E 01	6.548E-03	7.255E 01	1.119E-02
3.875E 01	6.637E 00	1.108E 01	-2.781E 02	-3.262E 02	-2.521E 02	-7.406E 01	9.815E 02	4.325E 01	6.672E-03	7.221E 01	1.114E-02
3.901E 01	8.320E 00	1.038E 01	-2.831E 02	-3.496E 02	-2.580E 02	-9.154E 01	1.011E 03	5.422E 01	8.364E-03	6.764E 01	1.043E-02
3.950E 01	1.147E 01	9.058E 00	-3.011E 02	-3.957E 02	-2.714E 02	-1.244E 02	1.067E 03	7.474E 01	1.153E-02	5.903E 01	9.106E-03
3.975E 01	1.103E 01	8.381E 00	-3.105E 02	-4.205E 02	-2.793E 02	-1.412E 02	1.096E 03	7.190E 01	1.109E-02	5.462E 01	8.425E-03
4.000E 01	1.060E 01	8.087E 00	-3.168E 02	-4.458E 02	-2.880E 02	-1.578E 02	1.125E 03	6.908E 01	1.066E-02	5.270E 01	8.129E-03
4.022E 01	1.143E 01	7.825E 00	-3.229E 02	-4.688E 02	-2.963E 02	-1.725E 02	1.151E 03	7.448E 01	1.149E-02	5.100E 01	7.866E-03
4.040E 01	1.210E 01	9.010E 00	-3.274E 02	-4.877E 02	-3.033E 02	-1.844E 02	1.171E 03	7.886E 01	1.216E-02	5.872E 01	9.057E-03
4.041E 01	1.214E 01	9.076E 00	-3.276E 02	-4.887E 02	-3.037E 02	-1.850E 02	1.173E 03	7.910E 01	1.220E-02	5.915E 01	9.124E-03
4.073E 01	1.334E 01	1.120E 01	-3.335E 02	-5.231E 02	-3.168E 02	-2.063E 02	1.210E 03	8.695E 01	1.341E-02	7.299E 01	1.126E-02
4.122E 01	1.518E 01	1.962E 00	-3.536E 02	-5.766E 02	-3.383E 02	-2.383E 02	1.268E 03	9.892E 01	1.526E-02	1.279E 01	1.973E-03
4.150E 01	1.622E 01	2.026E 00	-3.732E 02	-6.076E 02	-3.515E 02	-2.561E 02	1.301E 03	1.057E 02	1.631E-02	1.320E 01	2.036E-03
4.246E 01	7.500E 00	2.243E 00	-4.139E 02	-7.128E 02	-3.973E 02	-3.155E 02	1.415E 03	4.888E 01	7.540E-03	1.462E 01	2.255E-03
4.271E 01	8.123E 00	2.299E 00	-4.189E 02	-7.378E 02	-4.084E 02	-3.294E 02	1.444E 03	5.294E 01	8.166E-03	1.498E 01	2.311E-03
4.272E 01	8.148E 00	2.301E 00	-4.191E 02	-7.388E 02	-4.088E 02	-3.300E 02	1.445E 03	5.310E 01	8.191E-03	1.500E 01	2.313E-03
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4.431E 01	1.218E 01	9.246E 00	-4.358E 02	-8.527E 02	-4.586E 02	-3.942E 02	1.637E 03	7.941E 01	1.225E-02	6.026E 01	9.295E-03
4.480E 01	1.342E 01	1.147E 01	-4.381E 02	-8.746E 02	-4.666E 02	-4.080E 02	1.697E 03	8.750E 01	1.350E-02	7.473E 01	1.153E-02
4.550E 01	1.238E 01	1.464E 01	-4.357E 02	-9.035E 02	-4.758E 02	-4.278E 02	1.763E 03	8.067E 01	1.244E-02	9.544E 01	1.472E-02
4.622E 01	1.131E 01	1.164E 01	-4.234E 02	-9.391E 02	-4.850E 02	-4.541E 02	1.870E 03	7.371E 01	1.137E-02	7.588E 01	1.170E-02
4.625E 01	1.126E 01	1.150E 01	-4.227E 02	-9.411E 02	-4.854E 02	-4.557E 02	1.874E 03	7.338E 01	1.132E-02	7.495E 01	1.156E-02
4.626E 01	1.124E 01	1.146E 01	-4.225E 02	-9.417E 02	-4.856E 02	-4.561E 02	1.875E 03	7.328E 01	1.130E-02	7.468E 01	1.152E-02
4.694E 01	1.023E 01	8.600E 00	-4.110E 02	-9.880E 02	-4.943E 02	-4.937E 02	1.959E 03	6.665E 01	1.028E-02	5.605E 01	8.645E-03
4.731E 01	9.675E 00	8.313E 00	-4.066E 02	-1.016E 03	-4.990E 02	-5.173E 02	2.005E 03	6.306E 01	9.726E-03	5.418E 01	8.357E-03
4.811E 01	1.147E 01	7.691E 00	-3.917E 02	-1.078E 03	-5.090E 02	-5.686E 02	2.104E 03	7.479E 01	1.154E-02	5.012E 01	7.731E-03
4.874E 01	7.200E 00	7.200E 00	-3.711E 02	-1.126E 03	-5.169E 02	-6.092E 02	2.183E 03	4.692E 01	7.238E-03	4.692E 01	7.238E-03
5.018E 01	6.515E 00	6.515E 00	-3.202E 02	-1.213E 03	-5.346E 02	-6.780E 02	2.363E 03	4.246E 01	6.550E-03	4.246E 01	6.550E-03
5.019E 01	6.510E 00	6.510E 00	-3.199E 02	-1.213E 03	-5.347E 02	-6.783E 02	2.364E 03	4.243E 01	6.545E-03	4.243E 01	6.545E-03
5.072E 01	6.258E 00	6.258E 00	-3.022E 02	-1.233E 03	-5.411E 02	-6.914E 02	2.430E 03	4.079E 01	6.291E-03	4.079E 01	6.291E-03
5.213E 01	3.712E 00	3.712E 00	-2.654E 02	-1.272E 03	-5.579E 02	-7.144E 02	2.608E 03	2.420E 01	3.732E-03	2.420E 01	3.732E-03
5.423E 01	1.750E 00	1.750E 00	-2.353E 02	-1.322E 03	-5.823E 02	-7.400E 02	2.874E 03	1.141E 01	1.759E-03	1.141E 01	1.759E-03
5.473E 01	2.825E 00	2.825E 00	-2.294E 02	-1.333E 03	-5.880E 02	-7.449E 02	2.938E 03	1.841E 01	2.840E-03	1.841E 01	2.840E-03
5.548E 01	2.229E 00	2.229E 00	-2.196E 02	-1.348E 03	-5.965E 02	-7.516E 02	3.034E 03	1.453E 01	2.241E-03	1.453E 01	2.241E-03
5.576E 01	2.007E 00	2.007E 00	-2.166E 02	-1.354E 03	-5.996E 02	-7.541E 02	3.069E 03	1.308E 01	2.018E-03	1.308E 01	2.018E-03
5.624E 01	1.719E 00	1.625E 00	-1.848E 02	-1.362E 03	-6.041E 02	-7.581E 02	3.102E 03	1.120E 01	1.728E-03	1.059E 01	1.634E-03
5.747E 01	1.427E 00	1.427E 00	-1.740E 02	-1.384E 03	-6.150E 02	-7.694E 02	3.209E 03	9.301E 00	1.435E-03	9.301E 00	1.435E-03
5.772E 01	1.875E 00	1.419E 00	-1.735E 02	-1.385E 03	-6.154E 02	-7.698E 02	3.217E 03	1.222E 01	1.885E-03	9.251E 00	1.427E-03
5.786E 01	1.875E 00	1.400E 00	-1.726E 02	-1.387E 03	-6.160E 02	-7.708E 02	3.234E 03	1.222E 01	1.885E-03	9.124E 00	1.407E-03
5.794E 01	1.389E 00	1.389E 00	-1.721E 02	-1.388E 03	-6.170E 02	-7.714E 02	3.245E 03	9.052E 00	1.396E-03	9.052E 00	1.396E-03
5.822E 01	1.350E 00	1.350E 00	-1.703E 02	-1.392E 03	-6.190E 02	-7.734E 02	3.280E 03	8.798E 00	1.357E-03	8.798E 00	1.357E-03
5.845E 01	1.362E 00	1.362E 00	-1.690E 02	-1.396E 03	-6.206E 02	-7.749E 02	3.309E 03	8.876E 00	1.369E-03	8.876E 00	1.369E-03
5.917E 01	1.400E 00	1.400E 00	-1.652E 02	-1.405E 03	-6.257E 02	-7.796E 02	3.402E 03	9.124E 00	1.407E-03	9.124E 00	1.407E-03
6.019E 01	1.175E 00	1.175E 00	-1.622E 02	-1.417E 03	-6.326E 02	-7.848E 02	3.532E 03	7.658E 00	1.181E-03	7.658E 00	1.181E-03
6.220E 01	1.062E 00	1.062E 00	-1.620E 02	-1.437E 03	-6.448E 02	-7.921E 02	3.790E 03	6.925E 00	1.068E-03	6.925E 00	1.068E-03

XARB	P-IH	P-OH	PPA	POX	P-IO	P-OO	CAVALL	P-IH/PSO	P-IH/PTO	P-OH/PSO	P-OH/PTO
6.362E 01	1.512E 00	1.512E 00	-1.420E 02	-1.45[illegible]E 03	-6.521E 02	-7.979E 02	4.972E 03	9.057E 00	1.520E-03	9.857E 00	1.520E-03
6.608E 01	1.934E 00	1.934E 00	-1.420E 02	-1.471E 03	-6.[illegible]E 02	-8.1[illegible]E 02	4.2[illegible]E 03	1.261E 01	1.945E-03	1.261E 01	1.945E-03
6.646E 01	1.750E 00	1.999E 00	-1.420E 02	-1.47[illegible]E 03	-6.618E 02	-8.125E 02	4.337E 03	1.141E 01	1.759E-03	1.303E 01	2.009E-03
6.650E 01	1.750E 00	2.006E 00	-1.420E 02	-1.475E 03	-6.619E 02	-8.127E 02	4.342E 03	1.141E 01	1.759E-03	1.307E 01	2.016E-03
6.670E 01	1.833E 00	2.040E 00	-1.420E 02	-1.476E 03	-6.624E 02	-8.140E 02	4.368E 03	1.194E 01	1.842E-03	1.330E 01	2.051E-03
6.836E 01	2.920E 00	1.549E 00	-1.404E 02	-1.492E 03	-6.669E 02	-8.249E 02	4.584E 03	1.642E 01	2.533E-03	1.009E 01	1.557E-03
6.980E 01	9.550E-01	1.123E 00	-6.554E 01	-1.506E 03	-6.717E 02	-8.341E 02	4.761E 03	6.224E 00	9.600E-04	7.319E 00	1.129E-03
7.052E 01	9.117E-01	9.100E-01	-4.015E 01	-1.518E 03	-6.740E 02	-8.432E 02	4.859E 03	5.942E 00	9.165E-04	5.931E 00	9.148E-04
7.113E 01	8.750E-01	8.883E-01	-2.051E 01	-1.525E 03	-6.766E 02	-8.485E 02	4.923E 03	5.705E 00	8.796E-04	5.790E 00	8.930E-04
7.251E 01	7.450E-01	8.393E-01	1.824E 01	-1.535E 03	-6.819E 02	-8.535E 02	5.089E 03	4.855E 00	7.489E-04	5.470E 00	8.438E-04
7.404E 01	5.765E-01	7.850E-01	5.314E 01	-1.547E 03	-6.871E 02	-8.601E 02	5.273E 03	3.757E 00	5.796E-04	5.116E 00	7.891E-04
7.419E 01	5.600E-01	7.333E-01	5.599E 01	-1.549E 03	-6.875E 02	-8.613E 02	5.291E 03	3.650E 00	5.630E-04	4.779E 00	7.372E-04
7.494E 01	5.528E-01	4.750E-01	7.590E 01	-1.558E 03	-6.894E 02	-8.685E 02	5.375E 03	3.603E 00	5.557E-04	3.096E 00	4.775E-04
7.494E 01	5.527E-01	4.736E-01	7.682E 01	-1.558E 03	-6.894E 02	-8.686E 02	5.375E 03	3.602E 00	5.557E-04	3.087E 00	4.761E-04
7.627E 01	5.400E-01	0.000	8.836E 01	-1.576E 03	-6.922E 02	-8.839E 02	5.427E 03	3.519E 00	5.429E-04	0.000	0.000
7.912E 01	2.900E-01	0.000	1.050E 02	-1.580E 03	-6.964E 02	-8.839E 02	5.525E 03	1.890E 00	2.915E-04	0.000	0.000
8.302E 01	2.700E-01	0.000	1.169E 02	-1.585E 03	-6.994E 02	-8.839E 02	5.630E 03	1.760E 00	2.714E-04	0.000	0.000
8.583E 01	2.550E-01	0.000	1.229E 02	-1.585E 03	-7.013E 02	-8.839E 02	5.665E 03	1.662E 00	2.563E-04	0.000	0.000
8.869E 01	3.600E-01	0.000	1.302E 02	-1.589E 03	-7.049E 02	-8.839E 02	5.707E 03	2.346E 00	3.619E-04	0.000	0.000
8.870E 01	3.602E-01	0.000	1.302E 02	-1.589E 03	-7.049E 02	-8.839E 02	5.707E 03	2.348E 00	3.621E-04	0.000	0.000

ORIGINAL PAGE IS
OF POOR QUALITY

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.552E 01	8.552E 01	2.273E-03	3.434E-02
4.041E 01	1.671E-01	8.568E 01	2.797E-03	3.305E-02
4.073E 01	5.494E 00	9.118E 01	2.455E-03	3.961E-02
4.122E 01	7.820E 00	9.900E 01	2.428E-03	3.071E-02
4.150E 01	4.448E 00	1.034E 02	2.463E-03	3.187E-02
4.246E 01	1.546E 01	1.189E 02	2.628E-03	1.925E-02
4.271E 01	4.333E 00	1.232E 02	3.097E-03	1.920E-02
4.272E 01	1.750E-01	1.234E 02	2.765E-03	2.062E-02
4.278E 01	1.083E 00	1.245E 02	2.711E-03	2.110E-02
4.431E 01	2.338E 01	1.479E 02	2.708E-03	3.427E-02
4.480E 01	6.845E 00	1.547E 02	2.734E-03	3.778E-02
4.550E 01	9.608E 00	1.643E 02	2.751E-03	3.977E-02
4.622E 01	9.717E 00	1.740E 02	2.748E-03	3.520E-02
4.625E 01	4.995E-01	1.745E 02	3.274E-03	3.209E-02
4.626E 01	1.528E-01	1.747E 02	2.875E-03	3.595E-02
4.690E 01	9.325E 00	1.840E 02	2.790E-03	3.187E-02
4.731E 01	4.855E 00	1.889E 02	2.775E-03	3.077E-02
4.811E 01	9.845E 00	1.987E 02	2.755E-03	3.152E-02
4.874E 01	7.109E 00	2.058E 02	2.722E-03	2.538E-02
5.018E 01	1.555E 01	2.214E 02	3.231E-03	2.018E-02
5.019E 01	1.052E-01	2.215E 02	3.231E-03	2.018E-02
5.072E 01	4.975E 00	2.265E 02	2.706E-03	2.230E-02
5.213E 01	1.099E 01	2.375E 02	2.648E-03	1.503E-02
5.423E 01	1.455E 01	2.520E 02	2.743E-03	8.206E-03
5.473E 01	3.082E 00	2.551E 02	2.619E-03	1.171E-02
5.548E 01	4.266E 00	2.594E 02	2.615E-03	9.756E-03
5.576E 01	1.549E 00	2.609E 02	2.621E-03	8.996E-03
5.624E 01	1.233E 00	2.621E 02	2.539E-03	7.502E-03
5.767E 01	3.562E 00	2.657E 02	2.696E-03	6.304E-03
5.772E 01	2.234E-01	2.659E 02	2.538E-03	7.260E-03
5.786E 01	5.390E-01	2.665E 02	2.515E-03	7.260E-03
5.794E 01	3.143E-01	2.668E 02	2.562E-03	6.373E-03
5.822E 01	1.109E 00	2.679E 02	2.524E-03	6.283E-03
5.845E 01	8.859E-01	2.688E 02	2.513E-03	6.323E-03
5.917E 01	2.803E 00	2.716E 02	2.500E-03	6.423E-03
6.019E 01	3.926E 00	2.755E 02	2.517E-03	5.613E-03
6.220E 01	8.250E 00	2.837E 02	2.724E-03	4.961E-03
6.362E 01	5.959E 00	2.897E 02	2.520E-03	6.708E-03
6.608E 01	9.590E 00	2.993E 02	2.519E-03	8.000E-03
6.646E 01	1.360E 00	3.007E 02	2.548E-03	7.764E-03
6.650E 01	1.202E-01	3.008E 02	2.509E-03	7.645E-03
6.670E 01	5.079E-01	3.013E 02	2.513E-03	7.807E-03
6.836E 01	4.360E 00	3.056E 02	2.511E-03	8.045E-03
6.980E 01	3.011E 00	3.086E 02	2.381E-03	4.978E-03
7.052E 01	1.158E 00	3.098E 02	2.354E-03	4.519E-03
7.113E 01	9.245E-01	3.107E 02	2.347E-03	4.411E-03
7.251E 01	1.987E 00	3.127E 02	2.324E-03	4.072E-03
7.404E 01	2.022E 00	3.147E 02	2.289E-03	3.635E-03
7.419E 01	1.767E-01	3.149E 02	2.280E-03	3.501E-03
7.494E 01	7.918E-01	3.157E 02	2.239E-03	2.958E-03
7.494E 01	1.403E-03	3.157E 02	2.239E-03	2.955E-03
7.627E 01	4.562E-01	3.162E 02	2.242E-03	3.058E-03
7.912E 01	7.227E-01	3.169E 02	2.131E-03	1.931E-03
8.302E 01	5.979E-01	3.175E 02	2.166E-03	1.818E-03
8.583E 01	2.956E-01	3.178E 02	2.087E-03	1.733E-03
8.869E 01	1.356E-01	3.179E 02	2.130E-03	2.221E-03

READING = 0089 BLOCK = 94 TIME = 272.373 MACH 7.2 P1 = 994.749 TT = 5175.3

X	UDRAG	CDRAG	CF	HC
8.870E 01	0.000	3.179E 02	2.130E-03	2.222E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-217.	(LBF)
MEASURED THRUST	-129.	(LBF)
CALCULATED SPECIFIC IMPULSE	-595.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-354.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.1509	
MEASURED THRUST COEFFICIENT	-.0897	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	2721.	(LBF)
NET THRUST	-175.	(LBF)
SPECIFIC IMPULSE	-479.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.1215	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.5	(LBF)
INLET MOMENTUM CHANGE	-413.0	(LBF)
COMBUSTOR FRICTION DRAG	215.1	(LBF)
COMBUSTOR STRUT DRAG	5.05	(LBF)
COMBUSTOR MOMENTUM CHANGE	-79.	(LBF)
NOZZLE FRICTION DRAG	17.27	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	275.	(LBF)
NOZZLE PRESSURE INTEGRAL	292.	(LBF)
EXTERNAL FRICTION DRAG	65.50	(LBF)
EXTERNAL PRESSURE INTEGRAL	-677.	(LBF)
TOTAL EXTERNAL DRAG	-742.	(LBF)
TOTAL STRUT DRAG	5.05	(LBF)
CAVITY FORCE	-612.	(LBF)
CALCULATED LOAD CELL FORCE	-1571.	(LBF)
MEASURED LOAD CELL FORCE	-1483.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, -123.7, -110.0,

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9912	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1002	
DELTA PT2	0.0885	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3175	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1019	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9037	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9131	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9262	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.6774	
ENTHALPY AT P0 - SUPERSONIC	-30.61	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	7.35	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0248
EQUIVALENCE RATIO	0.786
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.0991
COMBUSTOR EFFECTIVENESS	0.1340

INJECTOR DISCHARGE COEFFICIENTS 0.9198, 0.5585, 1.3323, 0.8182

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9881
NOZZLE COEFFICIENT - CT	0.9447
PROCESS EFFICIENCY	0.9520
KINETIC ENERGY EFFICIENCY	0.9749

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7210	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.605	(IN)
NOZZLE SHROUD TRAILING EDGE	74.945	(IN)
NOZZLE PLUG TRAILING EDGE	88.697	(IN)
STRUT LEADING EDGE	57.861	(IN)
STRUT TRAILING EDGE	66.461	(IN)
COMBUSTOR EXIT	66.461	(IN)

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.706	B
1C	44.300	
2A	50.181	D
2C	46.250	E
3A	55.471	
3B	57.656	
D	46.206	

ORIGINAL PAGE IS
OF POOR QUALITY

Reading 89

t = 283.17 sec.

Injected fuel did not ignite.

2/13/75

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	FCNTM	G	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6														
0.000	994.249	3270	753.1(876)	1.2850	28.909	2688											
0.000	0.153	320	-52.2(77)	1.3971	28.908	877	7.235	6348	1.834	0.05662	14.356	0.0899	2871	5.585	200.0		
SPIKE TIP NS		2	0 6														
0.600	11.437	3270	753.0(875)	1.2840	28.907	2687											
0.600	10.607	3215	736.2(859)	1.2858	28.907	2667	0.304	918	2.141	0.05662	14.356	0.0899	3099	0.607	215.8		
WIND TUNNEL		3	0 0														
0.000	994.249	3270	753.1(876)	1.2850	28.909	2688											
0.000	0.174	332	-49.3(80)	1.3974	28.908	894											
							7.090	6336	1.834	0.06200	15.719	0.0899	3140	6.105	199.7		
SPIKE TIP NS		4	0 0														
0.600	11.437	3270	753.0(875)	1.2840	28.907	2687											
0.600	10.420	3203	732.3(856)	1.2862	28.908	2662	0.383	1019	2.141	0.06200	15.719	0.0899	3140	0.981	199.7		
INLET THROAT		5	0 3														
40.400	312.533	3156	717.7(842)	1.2884	28.909	2644											
40.400	10.379	1378	210.2(-339)	1.3554	28.908	1792	2.811	5039	1.903	0.70998	14.356	0.0789	2458	55.600	171.2		
INLET UPNRBK		6	0 3														
40.400	312.533	3156	717.7(842)	1.2884	28.909	2644											
40.400	8.957	1326	196.5(326)	1.3586	28.908	1760	2.902	5107	1.903	0.64544	14.356	0.0868	2078	51.223	172.6		
INLET DNNRBK		7	0 4														
40.400	99.918	3156	717.7(842)	1.2884	28.908	2644											
40.400	87.085	3060	688.3(813)	1.2913	28.908	2607	0.465	1212	1.981	0.64544	14.356	0.0868	2078	12.160	172.6		
COMBUSTOR	0	8	1 21														
40.410	232.471	3096	725.6(881)	1.2919	26.945	2717											
40.410	10.656	1460	226.5(387)	1.3526	26.945	1909	2.618	4997	2.033	0.71395	14.438	0.0790	2458	55.446	170.2	0.18	0.07
COMBUSTOR	0	9	2 3														
40.729	242.437	3044	723.1(865)	1.2943	26.897	2698											
40.729	12.362	1471	243.8(390)	1.3525	26.897	1918	2.554	4898	2.026	0.71656	14.438	0.0787	2447	54.538	169.5	0.18	0.03
COMBUSTOR	0	10	3 21														
41.219	216.196	3011	719.3(855)	1.2957	26.874	2686											
41.219	8.608	1360	219.5(359)	1.3589	26.873	1849	2.704	5001	2.031	0.71122	14.438	0.0793	2419	55.274	167.5	0.18	0.00
COMBUSTOR	0	11	4 21														
41.500	199.154	3000	717.0(852)	1.2961	26.870	2682											
41.500	9.177	1408	233.9(373)	1.3562	26.870	1880	2.616	4917	2.036	0.70410	14.438	0.0801	2395	53.799	165.9	0.18	0.00
COMBUSTOR	0	12	5 21														
42.460	123.318	2976	709.4(844)	1.2969	26.870	2672											
42.460	4.865	1339	214.7(353)	1.3602	26.869	1836	2.710	4975	2.069	0.66476	14.438	0.0848	2338	51.399	162.0	0.18	0.00
COMBUSTOR	0	13	6 21														
42.704	97.898	2935	714.9(876)	1.2994	25.442	2730											
42.704	5.211	1422	232.9(397)	1.3568	25.442	1942	2.529	4911	2.174	0.65924	14.507	0.0859	2329	50.314	160.5	0.34	0.03
COMBUSTOR	0	14	7 21														
42.714	105.047	2887	714.8(861)	1.3016	25.395	2712											
42.714	5.225	1369	233.1(382)	1.3601	25.394	1910											
							2.571	4910	2.164	0.65912	14.507	0.0859	2329	50.289	160.5	0.34	0.01
COMBUSTOR	0	15	8 21														
42.779	106.217	2879	714.4(858)	1.3020	25.387	2709											
42.779	5.317	1367	234.8(382)	1.3603	25.387	1908	2.567	4899	2.162	0.65753	14.507	0.0861	2326	50.060	160.4	0.34	0.00
COMBUSTOR	0	16	9 21														
44.310	117.033	2855	706.6(850)	1.3028	25.386	2699											
44.310	10.830	1590	301.9(448)	1.3486	25.386	2049	2.196	4500	2.152	0.60713	14.507	0.0933	2288	42.498	157.7	0.34	0.00
COMBUSTOR	0	17	10 21														
44.800	115.597	2850	705.0(849)	1.3030	25.386	2697											
44.800	12.594	1655	321.7(468)	1.3454	25.386	2089	2.097	4379	2.152	0.60033	14.507	0.0943	2279	40.855	157.1	0.34	0.00
COMBUSTOR	0	18	11 21														
45.499	111.918	2862	702.9(853)	1.3023	25.405	2701											
45.499	13.838	1718	334.9(487)	1.3424	25.405	2125	2.020	4291	2.156	0.59639	14.507	0.0950	2271	39.772	156.6	0.34	0.01

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READING = 0089  BLOCK = 106  TIME = 283.173  MACH  7.2  PT = 994.249  TT = 3270.4                                    PAGE  2

                    P     T      H           GAMMA  MOLWT SONV MACH  VEL   S     A/A     W     A/AC    MOMEN   S    IVAC  PHI  ETAC
COMBUSTOR         0  19    12  21
46.214     111.160 2838   700.2( 845) 1.3033 25.389 2691
46.214      12.004 1644   317.5( 465) 1.3459 25.389 2062 2.107 4376 2.154 0.57979 14.517 0.0977   2274 39.432 156.7 0.34 0.00
COMBUSTOR         0  20    13  21
46.250      81.454 2772   711.0( 907) 1.3077 22.967 2802
46.250      11.911 1727   342.4( 541) 1.3450 22.967 2242 1.915 4295 2.350 0.58389 14.645 0.0979   2254 38.971 153.9 0.64 0.04
COMBUSTOR         0  21    14  21
46.260      87.970 2685   713.9( 877) 1.3118 22.889 2766
46.260      11.686 1632   342.1( 510) 1.3501 22.889 2188 1.964 4296 2.333 0.58363 14.645 0.0980   2254 38.964 153.9 0.64 0.01
COMBUSTOR         0  22    15  21
46.939      83.915 2662   707.5( 869) 1.3127 22.877 2756
46.939      10.144 1570   326.3( 489) 1.3532 22.877 2149 2.032 4367 2.334 0.55561 14.645 0.1029   2255 37.707 154.0 0.64 0.00
COMBUSTOR         0  23    16  21
47.310      81.913 2654   705.3( 866) 1.3130 22.875 2752
47.310       9.767 1560   323.5( 486) 1.3537 22.875 2142 2.041 4371 2.335 0.54100 14.645 0.1057   2254 36.750 153.9 0.64 0.00
COMBUSTOR         0  24    17  21
48.110      79.426 2641   700.6( 861) 1.3134 22.875 2746
48.110      10.260 1584   331.7( 494) 1.3525 22.875 2158 1.991 4297 2.336 0.49724 14.645 0.1150   2258 33.203 154.2 0.64 0.00
COMBUSTOR         0  25    18  21
48.739      55.087 2894   696.9( 948) 1.3016 23.112 2847
48.739       7.200 1763   296.2( 551) 1.3418 23.112 2256 1.985 4476 2.395 0.45276 14.645 0.1263   2271 31.508 155.1 0.64 0.09
COMBUSTOR         0  26    19  21
50.179      52.000 2625   701.0( 915) 1.3149 21.370 2834
50.179       6.921 1584   313.2( 528) 1.3538 21.370 2233 1.973 4405 2.505 0.37111 14.752 0.1552   2295 25.408 155.6 0.88 0.03
COMBUSTOR         0  27    20  21
50.189      57.211 2531   701.0( 880) 1.3192 21.293 2792
50.189       6.919 1482   313.1( 493) 1.3596 21.293 2169 2.031 4405 2.484 0.37063 14.752 0.1554   2295 25.374 155.6 0.88 0.00
COMBUSTOR         0  28    21  21
50.719      57.353 2513   699.5( 874) 1.3200 21.281 2784
50.719       6.817 1463   312.0( 487) 1.3607 21.281 2157 2.042 4404 2.481 0.34663 14.752 0.1662   2309 23.722 156.5 0.88 0.00
COMBUSTOR         0  29    22  21
52.129      50.528 2503   696.5( 870) 1.3204 21.280 2779
52.129       4.337 1336   268.1( 442) 1.3670 21.280 2065 2.242 4630 2.491 0.29542 14.752 0.1950   2340 21.256 158.6 0.88 0.00
COMBUSTOR         0  30    23  21
54.229      33.025 2487   691.3( 867) 1.3209 21.196 2776
54.229       1.850 1182   214.0( 391) 1.3748 21.196 1952 2.504 4887 2.537 0.24270 14.787 0.2379   2359 18.434 159.5 0.89 0.00
COMBUSTOR         0  31    24  21
54.729      43.256 2481   690.5( 865) 1.3212 21.193 2773
54.729       3.500 1301   257.1( 432) 1.3688 21.193 2044 2.278 4657 2.510 0.23279 14.787 0.2480   2363 16.848 159.8 0.89 0.00
COMBUSTOR         0  32    25  21
55.479      38.809 2477   689.3( 863) 1.3213 21.192 2771
55.479       2.556 1229   232.2( 407) 1.3725 21.192 1989 2.404 4782 2.520 0.21944 14.787 0.2631   2370 16.309 160.3 0.89 0.00
COMBUSTOR         0  33    26  21
55.760      36.401 2476   688.9( 863) 1.3214 21.192 2770
55.760       2.203 1200   222.4( 397) 1.3739 21.192 1967 2.456 4831 2.526-0.21485 14.787 0.2687   2372 16.132 160.4 0.89 0.00
COMBUSTOR         0  34    27  21
56.239      26.720 2599   688.2( 908) 1.3156 21.294 2826
56.239       1.737 1295   207.6( 429) 1.3680 21.294 2034 2.411 4904 2.571 0.16976 14.787 0.3401   2405 12.938 162.7 0.89 0.03
COMBUSTOR         0  35    28  21
57.664      28.966 2488   686.5( 867) 1.3207 21.207 2776
57.664       1.438 1144   196.0( 378) 1.3766 21.207 1921 2.578 4954 2.549 0.15691 14.787 0.3679   2413 12.081 163.1 0.89 0.00
COMBUSTOR         0  36    29  21
57.719      31.581 2472   686.4( 861) 1.3215 21.194 2768
57.719       1.653 1152   204.7( 381) 1.3763 21.194 1928 2.546 4910 2.539 0.15646 14.787 0.3690   2413 11.938 163.2 0.89 0.00
COMBUSTOR         0  37    30  21
57.859      31.587 2469   686.3( 860) 1.3216 21.192 2767
57.859       1.645 1149   204.6( 380) 1.3765 21.192 1926 2.549 4910 2.538 0.15534 14.787 0.3717   2413 11.852 163.2 0.89 0.00
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READING = 0089  BLOCK = 106  TIME = 283.173  MACH  7.2  PT = 904.249  TT = 5270.4

                P       T       H               GAMMA  MOLWT  SONV  MACH  VEL    S      W/A      K     A/AC    MOMTM    Q     TVAC  PHI  ETAC
COMBUSTOR         0   38   31  21
57.939      29.706 2471   686.2( 861) 1.3215 21.194 2768
57.939       1.407 1120   194.0( 370) 1.3779 21.194 1903 2.608 4963 2.544 0.15716 14.787 0.3673   2413 12.121 163.2 0.89 0.00
COMBUSTOR         0   39   32  21
58.219      29.582 2468   685.9( 860) 1.3216 21.192 2766
58.219       1.375 1113   192.3( 367) 1.3782 21.192 1897 2.620 4970 2.544 0.15656 14.787 0.3688   2414 12.091 163.2 0.89 0.00
COMBUSTOR         0   40   33  21
58.445      29.725 2467   685.6( 860) 1.3217 21.192 2766
58.445       1.381 1112   192.2( 367) 1.3783 21.192 1896 2.620 4969 2.544 0.15635 14.787 0.3693   2414 12.075 163.3 0.89 0.00
COMBUSTOR         0   41   34  21
59.169      15.358 2933   684.8(1031) 1.2997 21.581 2964
59.169       1.400 1631   192.8( 543) 1.3481 21.582 2251 2.205 4962 2.657 0.15385 14.787 0.3753   2415 11.863 163.3 0.89 0.13
COMBUSTOR         0   42   35  21
60.189      24.212 2533   683.8( 884) 1.3186 21.249 2795
60.189       1.200 1168   184.5( 385) 1.3750 21.249 1938 2.579 4998 2.572 0.15286 14.787 0.3777   2413 11.874 163.2 0.89 0.02
COMBUSTOR         0   43   36  21
62.199      27.534 2469   682.1( 860) 1.3215 21.200 2766
62.199       1.275 1112   188.2( 367) 1.3782 21.200 1896 2.622 4971 2.551 0.15818 14.787 0.3650   2404 12.221 162.6 0.89 0.00
COMBUSTOR         0   44   37  21
63.619      29.670 2457   681.0( 856) 1.3220 21.193 2760
63.619       1.456 1124   195.6( 371) 1.3777 21.193 1906 2.586 4929 2.542 0.16247 14.787 0.3553   2398 12.444 162.1 0.89 0.00
COMBUSTOR         0   45   38  21
66.083      33.095 2450   679.0( 853) 1.3222 21.192 2757
66.083       2.469 1256   241.5( 416) 1.3711 21.192 2010 2.328 4679 2.531 0.15400 14.787 0.3749   2387 11.197 161.8 0.89 0.00
COMBUSTOR         0   46   39  21
66.459      30.376 2449   678.7( 853) 1.3223 21.192 2756
66.459       2.187 1243   237.2( 412) 1.3718 21.192 2000 2.350 4700 2.539 0.14317 14.787 0.4032   2386 10.457 161.4 0.89 0.00
COMBUSTOR  REGEN   47   40   4
66.459      30.376 2497   697.1( 871) 1.3207 21.192 2782
66.459       3.327 1422   299.5( 474) 1.3628 21.192 2132 2.092 4460 2.546 0.14317 14.787 0.4032   2394  9.924 161.9 0.89 0.00
NOZZLE  AE         48   41   4
88.695      30.376 2449   678.7( 853) 1.3223 21.192 2756
88.695       0.269  694    51.8( 227) 1.3959 21.192 1508 3.715 5601 2.539 0.02980 14.787 1.9371   2708  2.594 183.1 0.89 0.00
NOZZLE  PO         49   42   4
88.695      30.376 2449   678.7( 853) 1.3223 21.192 2756
88.695       0.153  591    17.7( 193) 1.3990 21.192 1392 4.131 5751 2.539 0.02040 14.787 2.8306   2754  1.823 186.2 0.89 0.00
NOZZLE  AE REGEN   50   43   4
88.695      30.376 2497   697.1( 871) 1.3207 21.192 2782
88.695       0.274  713    58.2( 233) 1.3953 21.192 1528 3.700 5654 2.546 0.02980 14.787 1.9372   2735  2.619 184.9 0.89 0.00
NOZZLE  PO REGEN   51   44   4
88.695      30.376 2497   697.1( 871) 1.3207 21.192 2782
88.695       0.153  604    22.2( 197) 1.3986 21.192 1408 4.128 5811 2.546 0.02015 14.787 2.8653   2763  1.820 188.2 0.89 0.00
FICTIVE COMBUSTR   69   62   0
66.459     312.533 5461   678.7(2004) 1.1638 24.149 3617
66.459       0.153 1204-1206.2( 361) 1.3399 24.743 1800 5.394 9712 2.513 0.01973 14.787 2.9262   4578  2.978 309.6 0.89 1.00
FICTIVE NOZZLE     70   63   0
88.695      28.194 2426   669.8( 844) 1.3230 21.192 2744
88.695       0.277  707    56.1( 231) 1.3955 21.192 1521 3.643 5542 2.542 0.02980 14.787 1.9371   2685  2.567 181.6 0.89 0.00
```

XABS	P-IB	P-OB	PDA	G-OX	G-IB	G-OB	CAWALL	P-IB/PSC	P-IB/PTC	P-OB/PSC	P-OB/PTC
6.981E-01	6.900E-01	0.000	-2.762E-01	0.000	0.000	0.000	2.470E-02	4.517E 00	6.940E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.517E 00	6.940E-04	0.000	0.000
3.070E 01	1.145E 00	0.000	-9.735E 01	0.000	0.000	0.000	5.053E 02	7.496E 00	1.152E-03	0.000	0.000
3.508E 01	2.006E 00	0.000	-1.995E 02	0.000	0.000	0.000	6.804E 02	1.314E 01	2.018E-03	0.000	0.000
3.559E 01	2.168E 00	0.000	-2.185E 02	0.000	0.000	0.000	7.013E 02	1.417E 01	2.178E-03	0.000	0.000
3.606E 01	2.040E 00	0.000	-2.398E 02	-2.239E 02	-2.239E 02	0.000	7.246E 02	1.336E 01	2.052E-03	0.000	0.000
3.648E 01	2.275E 00	0.000	-2.583E 02	-2.293E 02	-2.293E 02	0.000	7.443E 02	1.489E 01	2.288E-03	0.000	0.000
3.660E 01	2.290E 00	3.243E 00	-2.973E 02	-2.309E 02	-2.309E 02	0.000	7.498E 02	1.500E 01	2.304E-03	2.123E 01	3.262E-03
3.660E 01	2.291E 00	3.261E 00	-2.974E 02	-2.310E 02	-2.310E 02	0.000	7.501E 02	1.500E 01	2.304E-03	2.135E 01	3.280E-03
3.701E 01	2.345E 00	4.492E 00	-2.988E 02	-2.365E 02	-2.365E 02	0.000	7.923E 02	1.535E 01	2.359E-03	2.941E 01	4.518E-03
3.727E 01	2.261E 00	5.275E 00	-2.977E 02	-2.401E 02	-2.401E 02	0.000	8.195E 02	1.474E 01	2.264E-03	3.454E 01	5.306E-03
3.803E 01	1.975E 00	8.321E 00	-2.794E 02	-2.515E 02	-2.515E 02	0.000	9.013E 02	1.293E 01	1.986E-03	5.448E 01	8.369E-03
3.873E 01	6.500E 00	1.112E 01	-2.777E 02	-3.384E 02	-2.648E 02	-7.359E 01	9.793E 02	4.256E 01	6.538E-03	7.280E 01	1.118E-02
3.875E 01	6.637E 00	1.106E 01	-2.779E 02	-3.403E 02	-2.653E 02	-7.502E 01	9.817E 02	4.345E 01	6.675E-03	7.243E 01	1.113E-02
3.901E 01	8.320E 00	1.037E 01	-2.830E 02	-3.644E 02	-2.717E 02	-9.270E 01	1.011E 03	5.447E 01	8.368E-03	6.788E 01	1.043E-02
3.950E 01	1.146E 01	9.059E 00	-3.009E 02	-4.120E 02	-2.861E 02	-1.259E 02	1.067E 03	7.503E 01	1.153E-02	5.931E 01	9.111E-03
3.975E 01	1.104E 01	8.394E 00	-3.100E 02	-4.374E 02	-2.947E 02	-1.427E 02	1.096E 03	7.226E 01	1.110E-02	5.495E 01	8.442E-03
4.000E 01	1.061E 01	8.090E 00	-3.166E 02	-4.639E 02	-3.043E 02	-1.597E 02	1.125E 03	6.946E 01	1.067E-02	5.297E 01	8.137E-03
4.022E 01	1.144E 01	7.825E 00	-3.225E 02	-4.876E 02	-3.133E 02	-1.744E 02	1.150E 03	7.492E 01	1.151E-02	5.123E 01	7.870E-03
4.040E 01	1.213E 01	9.072E 00	-3.273E 02	-5.075E 02	-3.209E 02	-1.865E 02	1.172E 03	7.944E 01	1.220E-02	5.940E 01	9.124E-03
4.041E 01	1.217E 01	9.141E 00	-3.274E 02	-5.086E 02	-3.214E 02	-1.872E 02	1.173E 03	7.969E 01	1.224E-02	5.985E 01	9.194E-03
4.073E 01	1.339E 01	1.134E 01	-3.332E 02	-5.441E 02	-3.356E 02	-2.086E 02	1.210E 03	8.765E 01	1.346E-02	7.423E 01	1.140E-02
4.122E 01	1.585E 01	1.962E 00	-3.533E 02	-6.000E 02	-3.590E 02	-2.409E 02	1.268E 03	9.987E 01	1.534E-02	1.285E 01	1.974E-03
4.180E 01	1.632E 01	2.029E 00	-3.731E 02	-6.326E 02	-3.735E 02	-2.591E 02	1.301E 03	1.069E 02	1.642E-02	1.328E 01	2.041E-03
4.246E 01	7.475E 00	2.256E 00	-4.139E 02	-7.426E 02	-4.236E 02	-3.191E 02	1.415E 03	4.894E 01	7.518E-03	1.477E 01	2.269E-03
4.270E 01	8.108E 00	2.314E 00	-4.189E 02	-7.686E 02	-4.356E 02	-3.331E 02	1.444E 03	5.309E 01	8.155E-03	1.515E 01	2.327E-03
4.271E 01	8.134E 00	2.316E 00	-4.191E 02	-7.696E 02	-4.360E 02	-3.336E 02	1.445E 03	5.326E 01	8.181E-03	1.516E 01	2.329E-03
4.278E 01	8.303E 00	2.331E 00	-4.205E 02	-7.761E 02	-4.390E 02	-3.370E 02	1.453E 03	5.436E 01	8.351E-03	1.526E 01	2.345E-03
4.431E 01	1.228E 01	9.381E 00	-4.355E 02	-8.895E 02	-4.904E 02	-3.991E 02	1.638E 03	8.038E 01	1.235E-02	6.142E 01	9.436E-03
4.480E 01	1.355E 01	1.164E 01	-4.376E 02	-9.125E 02	-4.991E 02	-4.134E 02	1.697E 03	8.871E 01	1.363E-02	7.619E 01	1.170E-02
4.550E 01	1.282E 01	1.486E 01	-4.354E 02	-9.428E 02	-5.091E 02	-4.337E 02	1.782E 03	8.393E 01	1.289E-02	9.726E 01	1.494E-02
4.621E 01	1.207E 01	1.194E 01	-4.237E 02	-9.811E 02	-5.193E 02	-4.618E 02	1.870E 03	7.903E 01	1.214E-02	7.815E 01	1.201E-02
4.625E 01	1.203E 01	1.179E 01	-4.230E 02	-9.834E 02	-5.198E 02	-4.636E 02	1.874E 03	7.878E 01	1.210E-02	7.718E 01	1.186E-02
4.626E 01	1.202E 01	1.175E 01	-4.229E 02	-9.841E 02	-5.200E 02	-4.641E 02	1.876E 03	7.872E 01	1.209E-02	7.691E 01	1.182E-02
4.694E 01	1.131E 01	8.975E 00	-4.121E 02	-1.035E 03	-5.296E 02	-5.054E 02	1.959E 03	7.407E 01	1.138E-02	5.876E 01	9.027E-03
4.731E 01	1.092E 01	8.609E 00	-4.083E 02	-1.067E 03	-5.348E 02	-5.318E 02	2.005E 03	7.153E 01	1.099E-02	5.636E 01	8.659E-03
4.811E 01	1.270E 01	7.820E 00	-3.945E 02	-1.135E 03	-5.461E 02	-5.890E 02	2.104E 03	8.315E 01	1.277E-02	5.120E 01	7.865E-03
4.874E 01	7.200E 00	7.200E 00	-3.742E 02	-1.189E 03	-5.550E 02	-6.341E 02	2.182E 03	4.714E 01	7.242E-03	4.714E 01	7.242E-03
5.018E 01	6.921E 00	6.921E 00	-3.218E 02	-1.285E 03	-5.752E 02	-7.099E 02	2.362E 03	4.531E 01	6.961E-03	4.531E 01	6.961E-03
5.019E 01	6.919E 00	6.919E 00	-3.219E 02	-1.286E 03	-5.753E 02	-7.102E 02	2.364E 03	4.530E 01	6.959E-03	4.530E 01	6.959E-03
5.072E 01	6.817E 00	6.817E 00	-3.025E 02	-1.307E 03	-5.827E 02	-7.242E 02	2.430E 03	4.463E 01	6.856E-03	4.463E 01	6.856E-03
5.213E 01	4.337E 00	4.337E 00	-2.613E 02	-1.351E 03	-6.024E 02	-7.488E 02	2.608E 03	2.840E 01	4.363E-03	2.840E 01	4.363E-03
5.423E 01	1.850E 00	1.850E 00	-2.272E 02	-1.408E 03	-6.314E 02	-7.768E 02	2.874E 03	1.211E 01	1.861E-03	1.211E 01	1.861E-03
5.473E 01	3.500E 00	3.500E 00	-2.202E 02	-1.420E 03	-6.383E 02	-7.821E 02	2.938E 03	2.291E 01	3.520E-03	2.291E 01	3.520E-03
5.548E 01	2.556E 00	2.556E 00	-2.085E 02	-1.438E 03	-6.486E 02	-7.895E 02	3.034E 03	1.674E 01	2.571E-03	1.674E 01	2.571E-03
5.576E 01	2.203E 00	2.203E 00	-2.051E 02	-1.445E 03	-6.524E 02	-7.922E 02	3.070E 03	1.442E 01	2.215E-03	1.442E 01	2.215E-03
5.624E 01	1.875E 00	1.600E 00	-1.707E 02	-1.455E 03	-6.580E 02	-7.966E 02	3.102E 03	1.228E 01	1.886E-03	1.048E 01	1.609E-03
5.766E 01	1.438E 00	1.438E 00	-1.599E 02	-1.480E 03	-6.712E 02	-8.087E 02	3.209E 03	9.415E 00	1.446E-03	9.415E 00	1.446E-03
5.772E 01	1.875E 00	1.432E 00	-1.595E 02	-1.481E 03	-6.717E 02	-8.091E 02	3.217E 03	1.228E 01	1.886E-03	9.374E 00	1.440E-03
5.786E 01	1.875E 00	1.416E 00	-1.585E 02	-1.483E 03	-6.730E 02	-8.102E 02	3.234E 03	1.228E 01	1.886E-03	9.270E 00	1.424E-03
5.794E 01	1.407E 00	1.407E 00	-1.580E 02	-1.485E 03	-6.737E 02	-8.109E 02	3.245E 03	9.211E 00	1.415E-03	9.211E 00	1.415E-03
5.822E 01	1.375E 00	1.375E 00	-1.562E 02	-1.489E 03	-6.763E 02	-8.131E 02	3.280E 03	9.002E 00	1.383E-03	9.002E 00	1.383E-03
5.844E 01	1.381E 00	1.381E 00	-1.548E 02	-1.493E 03	-6.783E 02	-8.148E 02	3.309E 03	9.041E 00	1.389E-03	9.041E 00	1.389E-03
5.917E 01	1.400E 00	1.400E 00	-1.511E 02	-1.505E 03	-6.847E 02	-8.205E 02	3.402E 03	9.166E 00	1.408E-03	9.166E 00	1.408E-03
6.019E 01	1.200E 00	1.200E 00	-1.480E 02	-1.520E 03	-6.936E 02	-8.266E 02	3.532E 03	7.856E 00	1.207E-03	7.856E 00	1.207E-03
6.220E 01	1.275E 00	1.275E 00	-1.478E 02	-1.545E 03	-7.098E 02	-8.348E 02	3.790E 03	8.348E 00	1.282E-03	8.348E 00	1.282E-03

READING = 0089 BLOCK = 106 TIME = 283.173 MACH 7.2 PT = 994.249 TT = 3270.4

XABS	P-IR	P-OB	PPA	QOX	C-IR	Q-CB	CAPALI	P-TB/PSO	P-IR/PTO	P-OB/PSO	P-OB/PTO
6.362E 01	1.456E 00	1.456E 00	-1.478E 02	-1.561E 03	-7.194E 02	-8.415E 02	3.972E 03	9.534E 00	1.465E-03	9.534E 00	1.465E-03
6.608E 01	2.469E 00	2.469E 00	-1.478E 02	-1.591E 03	-7.305E 02	-8.605E 02	4.269E 03	1.617E 01	2.484E-03	1.617E 01	2.484E-03
6.646E 01	1.750E 00	2.624E 00	-1.478E 02	-1.596E 03	-7.315E 02	-8.643E 02	4.337E 03	1.146E 01	1.767E-03	1.718E 01	2.639E-03
6.650E 01	1.750E 00	2.640E 00	-1.478E 02	-1.596E 03	-7.317E 02	-8.647E 02	4.342E 03	1.146E 01	1.760E-03	1.729E 01	2.656E-03
6.670E 01	1.834E 00	2.722E 00	-1.478E 02	-1.599E 03	-7.322E 02	-8.667E 02	4.368E 03	1.201E 01	1.844E-03	1.782E 01	2.738E-03
6.836E 01	2.530E 00	1.924E 00	-1.225E 02	-1.619E 03	-7.378E 02	-8.812E 02	4.584E 03	1.656E 01	2.545E-03	1.260E 01	1.935E-03
6.980E 01	1.095E 00	1.231E 00	-4.003E 01	-1.636E 03	-7.441E 02	-8.938E 02	4.761E 03	7.169E 00	1.101E-03	8.062E 00	1.238E-03
7.052E 01	1.106E 00	8.850E-01	-1.206E 01	-1.649E 03	-7.475E 02	-9.017E 02	4.849E 03	7.240E 00	1.112E-03	5.794E 00	8.901E-04
7.113E 01	1.115E 00	8.737E-01	1.008E 01	-1.656E 03	-7.504E 02	-9.074E 02	4.923E 03	7.300E 00	1.121E-03	5.720E 00	8.788E-04
7.251E 01	8.250E-01	8.483E-01	5.305E 01	-1.669E 03	-7.570E 02	-9.121E 02	5.089E 03	5.401E 00	8.298E-04	5.554E 00	8.532E-04
7.404E 01	5.973E-01	8.200E-01	8.979E 01	-1.681E 03	-7.631E 02	-9.182E 02	5.273E 03	3.911E 00	6.008E-04	5.369E 00	8.247E-04
7.419E 01	5.750E-01	7.633E-01	9.274E 01	-1.683E 03	-7.636E 02	-9.195E 02	5.291E 03	3.765E 00	5.783E-04	4.998E 00	7.678E-04
7.494E 01	5.696E-01	4.800E-01	1.132E 02	-1.693E 03	-7.659E 02	-9.271E 02	5.375E 03	3.729E 00	5.729E-04	3.143E 00	4.828E-04
7.494E 01	5.696E-01	4.785E-01	1.142E 02	-1.693E 03	-7.659E 02	-9.271E 02	5.375E 03	3.729E 00	5.729E-04	3.133E 00	4.813E-04
7.627E 01	5.600E-01	0.000	1.261E 02	-1.712E 03	-7.693E 02	-9.431E 02	5.427E 03	3.666E 00	5.632E-04	0.000	0.000
7.912E 01	3.000E-01	0.000	1.433E 02	-1.717E 03	-7.742E 02	-9.431E 02	5.525E 03	1.964E 00	3.017E-04	0.000	0.000
8.302E 01	2.750E-01	0.000	1.556E 02	-1.721E 03	-7.776E 02	-9.431E 02	5.630E 03	1.800E 00	2.766E-04	0.000	0.000
8.583E 01	2.650E-01	0.000	1.616E 02	-1.723E 03	-7.796E 02	-9.431E 02	5.685E 03	1.735E 00	2.665E-04	0.000	0.000
8.869E 01	3.550E-01	0.000	1.691E 02	-1.726E 03	-7.833E 02	-9.431E 02	5.707E 03	2.324E 00	3.571E-04	0.000	0.000
8.869E 01	3.552E-01	0.000	1.691E 02	-1.726E 03	-7.833E 02	-9.431E 02	5.707E 03	2.325E 00	3.572E-04	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.582E 01	8.582E 01	2.300E-03	3.404E-02
4.041E 01	1.667E-01	8.598E 01	2.818E-03	3.508E-02
4.073E 01	5.443E 00	9.143E 01	2.484E-03	3.996E-02
4.122E 01	7.835E 00	9.926E 01	2.470E-03	3.062E-02
4.150E 01	4.492E 00	1.036E 02	2.495E-03	3.188E-02
4.246E 01	1.547E 01	1.192E 02	2.660E-03	1.916E-02
4.270E 01	4.295E 00	1.235E 02	3.139E-03	1.913E-02
4.271E 01	1.769E-01	1.237E 02	2.801E-03	2.057E-02
4.278E 01	1.083E 00	1.248E 02	2.745E-03	2.106E-02
4.431E 01	2.341E 01	1.482E 02	2.741E-03	3.443E-02
4.480E 01	6.827E 00	1.550E 02	2.765E-03	3.797E-02
4.550E 01	9.541E 00	1.646E 02	2.785E-03	4.027E-02
4.621E 01	9.644E 00	1.742E 02	2.776E-03	3.624E-02
4.625E 01	5.287E-01	1.747E 02	3.358E-03	3.264E-02
4.626E 01	1.514E-01	1.749E 02	2.945E-03	3.681E-02
4.694E 01	9.292E 00	1.842E 02	2.857E-03	3.336E-02
4.731E 01	4.878E 00	1.891E 02	2.842E-03	3.238E-02
4.811E 01	9.824E 00	1.989E 02	2.825E-03	3.279E-02
4.874E 01	7.114E 00	2.060E 02	2.794E-03	2.524E-02
5.018E 01	1.582E 01	2.218E 02	3.355E-03	2.051E-02
5.019E 01	1.077E-01	2.219E 02	3.385E-03	2.051E-02
5.072E 01	5.043E 00	2.270E 02	2.795E-03	2.359E-02
5.213E 01	1.102E 01	2.380E 02	2.725E-03	1.682E-02
5.423E 01	1.463E 01	2.526E 02	2.814E-03	8.606E-03
5.473E 01	3.089E 00	2.557E 02	2.681E-03	1.372E-02
5.548E 01	4.252E 00	2.600E 02	2.672E-03	1.086E-02
5.576E 01	1.562E 00	2.615E 02	2.680E-03	9.701E-03
5.624E 01	1.240E 00	2.628E 02	2.601E-03	7.783E-03
5.766E 01	3.609E 00	2.664E 02	2.758E-03	6.402E-03
5.772E 01	2.268E-01	2.666E 02	2.602E-03	7.344E-03
5.786E 01	5.501E-01	2.671E 02	2.602E-03	7.344E-03
5.794E 01	3.199E-01	2.675E 02	2.612E-03	6.516E-03
5.822E 01	1.123E 00	2.686E 02	2.587E-03	6.428E-03
5.844E 01	8.998E-01	2.695E 02	2.578E-03	6.445E-03
5.917E 01	2.881E 00	2.723E 02	2.565E-03	6.481E-03
6.019E 01	4.435E 00	2.768E 02	3.152E-03	5.013E-03
6.220E 01	9.048E 00	2.858E 02	2.672E-03	5.862E-03
6.362E 01	5.894E 00	2.917E 02	2.574E-03	6.605E-03
6.608E 01	9.610E 00	3.013E 02	2.569E-03	9.611E-03
6.646E 01	1.350E 00	3.027E 02	2.599E-03	8.749E-03
6.650E 01	1.243E-01	3.028E 02	2.567E-03	8.652E-03
6.670E 01	5.517E-01	3.033E 02	2.572E-03	6.873E-03
6.836E 01	4.649E 00	3.080E 02	2.557E-03	8.697E-03
6.980E 01	3.179E 00	3.112E 02	2.430E-03	5.488E-03
7.052E 01	1.230E 00	3.124E 02	2.398E-03	4.900E-03
7.113E 01	9.891E-01	3.134E 02	2.397E-03	4.892E-03
7.251E 01	2.098E 00	3.155E 02	2.363E-03	4.311E-03
7.404E 01	2.083E 00	3.176E 02	2.325E-03	3.809E-03
7.419E 01	1.810E-01	3.177E 02	2.315E-03	3.654E-03
7.494E 01	8.063E-01	3.186E 02	2.272E-03	3.059E-03
7.494E 01	1.423E-03	3.186E 02	2.272E-03	3.056E-03
7.627E 01	4.650E-01	3.190E 02	2.277E-03	3.196E-03
7.912E 01	7.405E-01	3.198E 02	2.166E-03	2.018E-03
8.302E 01	6.098E-01	3.204E 02	2.138E-03	1.878E-03
8.583E 01	3.020E-01	3.207E 02	2.122E-03	1.818E-03
8.669E 01	1.368E-01	3.208E 02	2.157E-03	2.240E-03

READING = 0089 BLOCK = 106 TIME = 283.173 MACH 7.2 PT = 994.249 TT = 3271.4

X	DDRAG	CDRAG	CF	HC
8.869E 01	0.000	3.206E 02	2.157E-03	2.241E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-187.	(LBF)
MEASURED THRUST	-117.	(LBF)
CALCULATED SPECIFIC IMPULSE	-463.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-290.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.1306	
MEASURED THRUST COEFFICIENT	-.0817	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	2711.	(LBF)
NET THRUST	-160.	(LBF)
SPECIFIC IMPULSE	-396.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.1119	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.8	(LBF)
INLET MOMENTUM CHANGE	-413.1	(LBF)
COMBUSTOR FRICTION DRAG	216.9	(LBF)
COMBUSTOR STRUT DRAG	2.37	(LBF)
COMBUSTOR MOMENTUM CHANGE	-72.	(LBF)
NOZZLE FRICTION DRAG	18.14	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	299.	(LBF)
NOZZLE PRESSURE INTEGRAL	317.	(LBF)
EXTERNAL FRICTION DRAG	66.43	(LBF)
EXTERNAL PRESSURE INTEGRAL	-679.	(LBF)
TOTAL EXTERNAL DRAG	-746.	(LBF)
TOTAL STRUT DRAG	2.37	(LBF)
CAVITY FORCE	-648.	(LBF)
CALCULATED LOAD CELL FORCE	-1580.	(LBF)
MEASURED LOAD CELL FORCE	-1510.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, -143.9, -119.1,

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7190	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.603	(IN)
NOZZLE SHROUD TRAILING EDGE	74.943	(IN)
NOZZLE PLUG TRAILING EDGE	88.695	(IN)
STRUT LEADING EDGE	57.459	(IN)
STRUT TRAILING EDGE	66.459	(IN)
COMBUSTOR EXIT	66.459	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9899	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0992	
DELTA PT2	1.0873	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3143	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1005	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9032	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9125	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9246	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8756	
ENTHALPY AT P0 - SUPERSONIC	-26.79	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	12.63	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0281
EQUIVALENCE RATIO	0.891
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.0972
COMBUSTOR EFFECTIVENESS	0.1375

INJECTOR DISCHARGE COEFFICIENTS 0.9131, 0.5613, 1.0788, 0.7768

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9915
NOZZLE COEFFICIENT - CT	0.9473
PROCESS EFFICIENCY	0.9671
KINETIC ENERGY EFFICIENCY	0.9821

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.704	B
1C	44.300	
2A	50.179	D
2C	46.250	E
3A	55.469	
3B	57.654	
4	46.204	

Reading 89

t = 290.37 sec.

Injected fuel did not ignite,

2/13/75

READING = 0089 BLOCK = 114 TIME = 290.373 MACH 7.2 PT = 994.749 TT = 3271.9

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H		GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOPTP	C	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6															
0.000	994.749	3272	753.5(	876)	1.2850	28.909	2689											
0.000	0.153	321	-52.1(	77)	1.3971	28.908	878	7.235	6349	1.835	0.05663	14.353	0.9896	2871	5.598	200.0		
SPIKE TIP NS		2	0 6															
0.600	11.412	3271	753.5(	876)	1.2840	28.907	2688											
0.600	10.579	3217	736.6(	860)	1.2858	28.907	2667	0.345	920	2.142	0.05663	14.353	0.9896	3092	0.810	215.4		
WIND TUNNEL		3	0 0															
0.000	994.749	3272	753.5(	876)	1.2850	28.909	2689											
0.000	0.173	332	-49.3(	80)	1.3974	28.908	893	7.094	6338	1.835	0.06184	15.674	0.9896	3132	6.091	199.8		
SPIKE TIP NS		4	0 0															
0.600	11.412	3271	753.5(	876)	1.2840	28.907	2688											
0.600	10.398	3204	732.8(	856)	1.2862	28.908	2662	0.383	1019	2.142	0.06184	15.674	0.9896	3132	0.979	199.8		
INLET THROAT		5	0 3															
40.400	295.668	3193	729.1(	853)	1.2873	28.909	2659											
40.400	10.833	1433	224.8(	354)	1.3522	28.908	1826	2.751	5024	1.910	0.71025	14.353	0.0789	2460	55.450	171.4		
INLET UPNRSK		6	0 3															
40.400	295.668	3193	729.1(	853)	1.2873	28.909	2659											
40.400	9.344	1379	210.5(	340)	1.3554	28.908	1793	2.841	5094	1.910	0.64569	14.353	0.0868	2480	51.116	172.8		
INLET DNNRSK		7	0 4															
40.400	99.945	3193	729.1(	853)	1.2872	28.908	2659											
40.400	86.920	3095	698.9(	823)	1.2902	28.908	2620	0.469	1229	1.985	0.64569	14.353	0.0868	2480	12.330	172.8		
COMBUSTOR	0	8	1 3															
40.410	295.350	3193	729.1(	853)	1.2873	28.909	2659											
40.410	10.837	1434	224.9(	354)	1.3521	28.908	1826	2.751	5023	1.910	0.71016	14.353	0.0789	2460	55.433	171.4		
COMBUSTOR	0	9	2 3															
40.731	286.822	3187	727.2(	851)	1.2875	28.909	2656											
40.731	11.059	1449	229.0(	358)	1.3513	28.908	1835	2.721	4993	1.912	0.71278	14.353	0.0786	2450	55.308	170.7		
COMBUSTOR	0	10	3 4															
41.221	260.048	3177	724.2(	848)	1.2878	28.909	2653											
41.221	11.520	1497	241.7(	371)	1.3485	28.908	1863											
								2.637	4914	1.918	0.70740	14.353	0.0792	2426	54.023	169.0		
COMBUSTOR	0	11	4 4															
41.500	437.903	3172	722.5(	846)	1.2879	28.909	2651											
41.500	11.921	1542	253.7(	383)	1.3461	28.908	1890	2.563	4844	1.923	0.70036	14.353	0.0800	2405	52.717	167.6		
COMBUSTOR	0	12	5 5															
42.460	190.869	3152	716.6(	840)	1.2885	28.909	2643											
42.460	12.330	1634	278.4(	407)	1.3413	28.908	1942	2.411	4682	1.937	0.66085	14.353	0.0848	2397	48.087	164.2		
COMBUSTOR	0	13	6 5															
42.716	184.130	3147	715.0(	839)	1.2887	28.909	2641											
42.716	12.340	1647	281.8(	411)	1.3407	28.908	1949	2.389	4656	1.939	0.65275	14.353	0.0858	2348	47.232	163.6		
COMBUSTOR	0	14	7 5															
42.781	182.196	3146	714.6(	839)	1.2887	28.909	2640											
42.781	12.330	1650	282.7(	412)	1.3405	28.908	1950	2.384	4649	1.939	0.64993	14.353	0.0862	2346	46.958	163.5		
COMBUSTOR	0	15	8 4															
44.310	148.037	3118	706.1(	830)	1.2896	28.908	2630											
44.310	12.287	1720	301.7(	431)	1.3372	28.908	1989	2.262	4498	1.951	0.60107	14.353	0.0932	2300	42.020	160.3		
COMBUSTOR	0	16	9 4															
44.800	139.626	3110	703.6(	828)	1.2898	28.908	2626											
44.800	12.493	1748	309.3(	438)	1.3360	28.908	2004	2.217	4442	1.954	0.59395	14.353	0.0943	2283	41.000	159.1		
COMBUSTOR	0	17	10 4															
45.501	130.856	3098	699.9(	824)	1.2902	28.908	2622											
45.501	12.876	1782	318.7(	448)	1.3345	28.908	2023	2.159	4367	1.957	0.59022	14.353	0.0949	2261	40.060	157.6		
COMBUSTOR	0	18	11 4															
46.216	123.599	3086	696.2(	821)	1.2905	28.908	2617											
46.216	12.731	1795	322.2(	451)	1.3340	28.908	2029	2.132	4326	1.960	0.57397	14.353	0.0976	2248	38.587	156.6		

READING = 0089 BLOCK = 114 TIME = 290.373 MACH 7.2 PT = 994.749 TT = 3271.9

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	TVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.250	75.722	2980	715.6(909)	1.2974	24.991	2774											
46.250	10.151	1836	336.8(533)	1.3370	24.991	2210	1.970	4354	2.234	0.57971	14.531	0.0979	2221	39.224	152.6	0.40	0.07
COMBUSTOR	0	20	13 21														
46.260	84.057	2860	715.6(869)	1.3031	24.872	2730											
46.260	10.151	1709	336.8(493)	1.3437	24.872	2140	2.034	4353	2.214	0.57935	14.531	0.0979	2221	39.194	152.8	0.40	0.01
COMBUSTOR	0	21	14 21														
46.941	81.886	2831	711.8(860)	1.3043	24.854	2718											
46.941	10.135	1697	340.2(491)	1.3443	24.854	2136	2.019	4312	2.213	0.55154	14.531	0.1029	2215	36.960	152.4	0.40	0.00
COMBUSTOR	0	22	15 21														
47.310	79.965	2823	709.7(857)	1.3046	24.852	2714											
47.310	9.977	1694	340.4(490)	1.3448	24.852	2135	2.014	4299	2.214	0.53688	14.531	0.1057	2212	35.868	152.2	0.40	0.00
COMBUSTOR	0	23	16 21														
48.110	75.217	2809	705.2(852)	1.3051	24.851	2708											
48.110	9.913	1704	343.3(493)	1.3440	24.851	2140	1.988	4255	2.216	0.49352	14.531	0.1150	2210	32.636	152.3	0.40	0.00
COMBUSTOR	0	24	17 21														
48.741	50.296	3160	701.7(935)	1.2881	25.214	2833											
48.741	7.225	1999	312.5(582)	1.3282	25.216	2288	1.929	4413	2.280	0.44922	14.531	0.1263	2227	30.808	153.2	0.40	0.19
COMBUSTOR	0	25	18 21														
50.181	45.993	2779	711.9(933)	1.3077	22.375	2842											
50.181	7.243	1764	344.1(568)	1.3439	22.375	2295	1.869	4290	2.452	0.36937	14.683	0.1552	2246	24.626	152.9	0.73	0.05
COMBUSTOR	0	26	19 21														
50.191	51.649	2644	711.8(886)	1.3139	22.258	2786											
50.191	7.243	1619	344.1(519)	1.3516	22.258	2211	1.940	4290	2.426	0.36889	14.683	0.1554	2246	24.592	153.0	0.73	0.01
COMBUSTOR	0	27	20 21														
50.721	52.178	2620	710.1(877)	1.3150	22.241	2775											
50.721	7.250	1598	344.4(512)	1.3528	22.241	2198	1.946	4278	2.422	0.34500	14.683	0.1662	2261	22.937	154.0	0.73	0.00
COMBUSTOR	0	28	21 21														
52.131	51.600	2607	706.4(872)	1.3155	22.238	2769											
52.131	7.475	1607	348.5(515)	1.3524	22.238	2204	1.920	4232	2.421	0.29404	14.683	0.1950	2305	19.338	157.0	0.73	0.00
COMBUSTOR	0	29	22 21														
54.231	33.438	2586	700.1(868)	1.3162	22.144	2765											
54.231	1.950	1251	227.9(397)	1.3703	22.144	1962	2.478	4861	2.465	0.24157	14.718	0.2379	2342	18.248	159.2	0.75	0.00
COMBUSTOR	0	30	23 21														
54.731	42.122	2579	699.1(866)	1.3165	22.140	2761											
54.731	3.350	1356	264.5(432)	1.3649	22.140	2038	2.288	4664	2.444	0.23170	14.718	0.2480	2346	16.792	159.4	0.75	0.00
COMBUSTOR	0	31	24 21														
55.481	39.011	2575	697.8(864)	1.3167	22.140	2759											
55.481	2.704	1304	247.5(415)	1.3676	22.139	2001	2.372	4747	2.450	0.21841	14.718	0.2631	2354	16.112	159.9	0.75	0.00
COMBUSTOR	0	32	25 21														
55.760	37.566	2574	697.3(864)	1.3167	22.140	2759											
55.760	2.464	1284	240.9(408)	1.3686	22.139	1987	2.406	4779	2.453	0.21388	14.718	0.2687	2356	15.885	160.1	0.75	0.00
COMBUSTOR	0	33	26 21														
56.241	29.097	2664	696.5(894)	1.3124	22.219	2797											
56.241	1.925	1340	225.4(424)	1.3649	22.219	2023	2.400	4855	2.487	0.16897	14.718	0.3401	2389	12.749	162.3	0.75	0.03
COMBUSTOR	0	34	27 21														
57.666	30.319	2580	694.5(866)	1.3163	22.151	2761											
57.666	1.582	1211	211.4(384)	1.3723	22.151	1931	2.546	4916	2.473	0.15623	14.718	0.3678	2398	11.936	162.9	0.75	0.00
COMBUSTOR	0	35	28 21														
57.721	31.996	2568	694.4(861)	1.3169	22.141	2756											
57.721	1.732	1216	217.5(386)	1.3721	22.141	1936	2.524	4685	2.467	0.15570	14.718	0.3691	2398	11.820	162.9	0.75	0.00
COMBUSTOR	0	36	29 21														
57.861	31.881	2566	694.2(861)	1.3170	22.140	2755											
57.861	1.709	1212	216.7(384)	1.3724	22.140	1932	2.530	4888	2.467	0.15464	14.718	0.3716	2399	11.747	163.0	0.75	0.00
COMBUSTOR	0	37	30 21														
57.941	30.408	2566	694.1(861)	1.3169	22.141	2755											
57.941	1.492	1183	206.9(375)	1.3739	22.141	1911	2.584	4937	2.471	0.15637	14.718	0.3675	2399	11.998	163.0	0.75	0.00

READING = 0089 BLOCK = 114 TIME = 290,373 MACH 7,2 PT = 994,749 TT = 3271,9

	W	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	A/A	F	A/AC	MOMTM	C	IVAC	PHI	ETAC
COMBUSTOR	0	38	31 21														
58,221	29,723	2564	693,7(860)	1,3170	22,140	2754											
58,221	1,400	1169	202,7(370)	1,3746	22,140	1900	2,609	4957	2,473	0,15594	14,718	0,3685	2400	12,013	163,0	0,75	0,00
COMBUSTOR	0	39	32 21														
58,447	29,785	2563	693,5(860)	1,3170	22,140	2753											
58,447	1,400	1168	202,4(370)	1,3746	22,139	1899	2,611	4957	2,472	0,15553	14,718	0,3695	2400	11,982	163,1	0,75	0,00
COMBUSTOR	0	40	33 21														
59,171	20,382	2806	692,6(946)	1,3057	22,351	2855											
59,171	1,400	1439	202,1(458)	1,3584	22,351	2085	2,376	4954	2,534	0,15312	14,718	0,3753	2401	11,789	163,1	0,75	0,08
COMBUSTOR	0	41	34 21														
60,191	25,769	2595	691,6(871)	1,3155	22,171	2767											
60,191	1,200	1182	193,6(374)	1,3736	22,171	1908	2,616	4992	2,490	0,15215	14,718	0,3777	2400	11,803	163,0	0,75	0,01
COMBUSTOR	0	42	35 21														
62,201	28,340	2560	690,0(858)	1,3171	22,144	2751											
62,201	1,325	1164	199,2(369)	1,3748	22,144	1896	2,614	4956	2,476	0,15744	14,718	0,3650	2391	12,125	162,4	0,75	0,00
COMBUSTOR	0	43	36 21														
63,621	29,597	2552	689,0(856)	1,3174	22,140	2748											
63,621	1,444	1174	204,1(372)	1,3743	22,140	1903	2,588	4926	2,471	0,16171	14,718	0,3553	2385	12,379	162,0	0,75	0,00
COMBUSTOR	0	44	37 21														
66,085	33,569	2546	686,9(853)	1,3176	22,140	2745											
66,085	2,701	1340	259,6(427)	1,3657	22,139	2027	2,281	4624	2,459	0,15328	14,718	0,3749	2375	11,016	161,4	0,75	0,00
COMBUSTOR	0	45	38 21														
66,461	30,748	2545	686,6(853)	1,3177	22,140	2744											
66,461	2,326	1318	252,1(420)	1,3669	22,139	2011	2,319	4663	2,467	0,14250	14,718	0,4032	2373	10,326	161,3	0,75	0,00
COMBUSTOR	REGEN	46	39 4														
66,461	30,748	2600	707,0(873)	1,3159	22,140	2772											
66,461	3,286	1479	306,5(474)	1,3587	22,140	2124	2,108	4477	2,475	0,14250	14,718	0,4032	2387	9,915	162,2	0,75	0,00
NOZZLE AE		47	40 4														
88,697	30,748	2545	686,6(853)	1,3177	22,140	2744											
88,697	0,268	724	59,1(227)	1,3947	22,139	1506	3,721	5603	2,467	0,02966	14,718	1,9372	2696	2,583	183,2	0,75	0,00
NOZZLE PO		48	41 4														
88,697	30,748	2545	686,6(853)	1,3177	22,140	2744											
88,697	0,153	618	25,5(193)	1,3981	22,140	1392	4,131	5752	2,467	0,02039	14,718	2,8182	2741	1,823	186,3	0,75	0,00
NOZZLE AE REGEN		49	42 4														
88,697	30,748	2600	707,0(873)	1,3159	22,140	2772											
88,697	0,273	747	66,3(234)	1,3939	22,139	1529	3,704	5662	2,475	0,02966	14,718	1,9372	2726	2,610	185,2	0,75	0,00
NOZZLE PO REGEN		50	43 4														
88,697	30,748	2600	707,0(873)	1,3159	22,140	2772											
88,697	0,153	633	30,4(198)	1,3976	22,140	1410	4,127	5819	2,475	0,02011	14,718	2,8569	2774	1,819	188,5	0,75	0,00
FICTIVE COMBUSTR		68	61 0														
66,461	295,668	5282	686,6(1896)	1,1758	24,944	3518											
66,461	0,193	1092	-1020,4(316)	1,3505	25,329	1702	5,431	9242	2,433	0,02119	14,718	2,7116	4334	3,044	294,5	0,75	1,00
FICTIVE NOZZLE		69	62 0														
88,697	29,649	2524	678,7(845)	1,3184	22,140	2733											
88,697	0,270	726	59,9(227)	1,3946	22,140	1508	3,689	5564	2,467	0,02966	14,718	1,9371	2660	2,565	182,1	0,75	0,00

XABS	P-IR	P-CH	PPA	QOX	Q-IR	Q-CB	CA-ALL	P-TH/P80	P-IR/PT0	P-OH/P80	P-OR/PT0
6.981E-01	6.900E-01	0.000	-2.756E-01	0.000	0.000	0.000	2.970E-02	4.516E 00	6.936E-04	0.000	0.000
1.536E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.516E 00	6.936E-04	0.000	0.000
3.070E 01	1.140E 00	0.000	-9.714E 01	0.000	0.000	0.000	5.053E 02	7.460E 00	1.146E-03	0.000	0.000
3.508E 01	2.006E 00	0.000	-1.991E 02	0.000	0.000	0.000	6.804E 02	1.313E 01	2.017E-03	0.000	0.000
3.555E 01	2.160E 00	0.000	-2.181E 02	0.000	0.000	0.000	7.013E 02	1.414E 01	2.171E-03	0.000	0.000
3.606E 01	2.050E 00	0.000	-2.395E 02	-1.397E 02	-1.397E 02	0.000	7.246E 02	1.342E 01	2.061E-03	0.000	0.000
3.648E 01	2.272E 00	0.000	-2.579E 02	-1.430E 02	-1.430E 02	0.000	7.443E 02	1.487E 01	2.284E-03	0.000	0.000
3.660E 01	2.287E 00	3.245E 00	-2.971E 02	-1.440E 02	-1.440E 02	0.000	7.499E 02	1.497E 01	2.299E-03	2.124E 01	3.262E-03
3.660E 01	2.288E 00	3.263E 00	-2.972E 02	-1.441E 02	-1.441E 02	0.000	7.502E 02	1.497E 01	2.300E-03	2.136E 01	3.281E-03
3.701E 01	2.340E 00	4.487E 00	-2.985E 02	-1.475E 02	-1.475E 02	0.000	7.922E 02	1.531E 01	2.352E-03	2.936E 01	4.510E-03
3.727E 01	2.248E 00	5.275E 00	-2.974E 02	-1.498E 02	-1.498E 02	0.000	8.196E 02	1.471E 01	2.260E-03	3.452E 01	5.303E-03
3.803E 01	1.980E 00	8.303E 00	-2.793E 02	-1.569E 02	-1.569E 02	0.000	9.012E 02	1.296E 01	1.990E-03	5.434E 01	8.347E-03
3.873E 01	6.515E 00	1.110E 01	-2.776E 02	-2.226E 02	-1.657E 02	-5.716E 01	9.794E 02	4.263E 01	6.549E-03	7.264E 01	1.116E-02
3.875E 01	6.638E 00	1.105E 01	-2.778E 02	-2.241E 02	-1.660E 02	-5.817E 01	9.815E 02	4.344E 01	6.673E-03	7.231E 01	1.111E-02
3.901E 01	8.320E 00	1.035E 01	-2.829E 02	-2.422E 02	-1.703E 02	-7.190E 01	1.011E 03	5.445E 01	8.364E-03	6.775E 01	1.041E-02
3.950E 01	1.135E 01	9.041E 00	-3.006E 02	-2.780E 02	-1.803E 02	-9.770E 01	1.067E 03	7.431E 01	1.141E-02	5.916E 01	9.088E-03
3.975E 01	1.098E 01	8.369E 00	-3.099E 02	-2.973E 02	-1.864E 02	-1.109E 02	1.096E 03	7.185E 01	1.104E-02	5.477E 01	8.413E-03
4.000E 01	1.061E 01	8.067E 00	-3.162E 02	-3.172E 02	-1.933E 02	-1.239E 02	1.125E 03	6.941E 01	1.066E-02	5.279E 01	8.110E-03
4.022E 01	1.111E 01	7.800E 00	-3.221E 02	-3.353E 02	-1.998E 02	-1.355E 02	1.151E 03	7.268E 01	1.116E-02	5.105E 01	7.841E-03
4.040E 01	1.151E 01	8.873E 00	-3.262E 02	-3.501E 02	-2.053E 02	-1.408E 02	1.171E 03	7.533E 01	1.157E-02	5.807E 01	8.920E-03
4.041E 01	1.153E 01	8.933E 00	-3.263E 02	-3.509E 02	-2.056E 02	-1.453E 02	1.173E 03	7.548E 01	1.159E-02	5.846E 01	8.980E-03
4.073E 01	1.226E 01	1.086E 01	-3.310E 02	-3.779E 02	-2.159E 02	-1.621E 02	1.210E 03	8.023E 01	1.232E-02	7.105E 01	1.091E-02
4.122E 01	1.337E 01	1.962E 00	-3.477E 02	-4.200E 02	-2.328E 02	-1.872E 02	1.268E 03	8.749E 01	1.344E-02	1.284E 01	1.973E-03
4.150E 01	1.400E 01	2.028E 00	-3.643E 02	-4.444E 02	-2.432E 02	-2.012E 02	1.301E 03	9.162E 01	1.407E-02	1.327E 01	2.039E-03
4.246E 01	6.750E 00	2.255E 00	-3.983E 02	-5.303E 02	-2.816E 02	-2.487E 02	1.415E 03	4.417E 01	6.786E-03	1.476E 01	2.267E-03
4.272E 01	7.382E 00	2.316E 00	-4.027E 02	-5.527E 02	-2.921E 02	-2.606E 02	1.445E 03	4.831E 01	7.421E-03	1.516E 01	2.328E-03
4.278E 01	7.542E 00	2.331E 00	-4.039E 02	-5.582E 02	-2.948E 02	-2.634E 02	1.453E 03	4.936E 01	7.582E-03	1.526E 01	2.344E-03
4.431E 01	1.132E 01	5.514E 00	-4.286E 02	-6.800E 02	-3.531E 02	-3.269E 02	1.637E 03	7.405E 01	1.138E-02	3.609E 01	5.543E-03
4.480E 01	1.252E 01	6.534E 00	-4.387E 02	-7.169E 02	-3.704E 02	-3.466E 02	1.697E 03	8.197E 01	1.259E-02	4.276E 01	6.569E-03
4.550E 01	1.234E 01	7.994E 00	-4.513E 02	-7.688E 02	-3.940E 02	-3.748E 02	1.783E 03	8.078E 01	1.241E-02	5.231E 01	8.036E-03
4.622E 01	1.216E 01	8.146E 00	-4.552E 02	-8.230E 02	-4.173E 02	-4.056E 02	1.870E 03	7.957E 01	1.222E-02	5.331E 01	8.189E-03
4.625E 01	1.215E 01	8.153E 00	-4.551E 02	-8.256E 02	-4.184E 02	-4.072E 02	1.874E 03	7.951E 01	1.221E-02	5.336E 01	8.196E-03
4.626E 01	1.215E 01	8.155E 00	-4.550E 02	-8.264E 02	-4.187E 02	-4.077E 02	1.875E 03	7.949E 01	1.221E-02	5.337E 01	8.198E-03
4.694E 01	1.197E 01	8.300E 00	-4.517E 02	-8.811E 02	-4.401E 02	-4.410E 02	1.959E 03	7.834E 01	1.203E-02	5.432E 01	8.344E-03
4.731E 01	1.187E 01	8.080E 00	-4.498E 02	-9.115E 02	-4.514E 02	-4.601E 02	2.005E 03	7.771E 01	1.194E-02	5.287E 01	8.122E-03
4.811E 01	1.222E 01	7.602E 00	-4.379E 02	-9.767E 02	-4.750E 02	-5.017E 02	2.104E 03	8.000E 01	1.229E-02	4.975E 01	7.642E-03
4.874E 01	7.225E 00	7.225E 00	-4.177E 02	-1.028E 03	-4.930E 02	-5.345E 02	2.183E 03	4.728E 01	7.263E-03	4.728E 01	7.263E-03
5.018E 01	7.243E 00	7.243E 00	-3.640E 02	-1.123E 03	-5.316E 02	-5.910E 02	2.363E 03	4.740E 01	7.281E-03	4.740E 01	7.281E-03
5.019E 01	7.243E 00	7.243E 00	-3.636E 02	-1.123E 03	-5.319E 02	-5.913E 02	2.364E 03	4.740E 01	7.282E-03	4.740E 01	7.282E-03
5.072E 01	7.250E 00	7.250E 00	-3.436E 02	-1.148E 03	-5.452E 02	-6.026E 02	2.430E 03	4.745E 01	7.288E-03	4.745E 01	7.288E-03
5.213E 01	7.475E 00	7.475E 00	-2.892E 02	-1.203E 03	-5.787E 02	-6.239E 02	2.608E 03	4.892E 01	7.514E-03	4.892E 01	7.514E-03
5.423E 01	1.950E 00	1.950E 00	-2.373E 02	-1.271E 03	-6.228E 02	-6.482E 02	2.874E 03	1.276E 01	1.960E-03	1.276E 01	1.960E-03
5.473E 01	3.350E 00	3.350E 00	-2.304E 02	-1.285E 03	-6.323E 02	-6.527E 02	2.938E 03	2.192E 01	3.368E-03	2.192E 01	3.368E-03
5.548E 01	2.704E 00	2.704E 00	-2.187E 02	-1.305E 03	-6.459E 02	-6.590E 02	3.034E 03	1.770E 01	2.719E-03	1.770E 01	2.719E-03
5.576E 01	2.464E 00	2.464E 00	-2.150E 02	-1.312E 03	-6.507E 02	-6.613E 02	3.069E 03	1.613E 01	2.477E-03	1.613E 01	2.477E-03
5.624E 01	1.800E 00	2.050E 00	-1.809E 02	-1.324E 03	-6.585E 02	-6.651E 02	3.102E 03	1.178E 01	1.809E-03	1.342E 01	2.061E-03
5.767E 01	1.582E 00	1.582E 00	-1.680E 02	-1.354E 03	-6.787E 02	-6.753E 02	3.209E 03	1.035E 01	1.591E-03	1.035E 01	1.591E-03
5.772E 01	1.900E 00	1.564E 00	-1.675E 02	-1.355E 03	-6.794E 02	-6.756E 02	3.217E 03	1.243E 01	1.910E-03	1.024E 01	1.572E-03
5.786E 01	1.900E 00	1.518E 00	-1.665E 02	-1.358E 03	-6.811E 02	-6.766E 02	3.234E 03	1.243E 01	1.910E-03	9.935E 00	1.526E-03
5.794E 01	1.492E 00	1.492E 00	-1.659E 02	-1.359E 03	-6.822E 02	-6.771E 02	3.245E 03	9.763E 00	1.500E-03	9.763E 00	1.500E-03
5.822E 01	1.400E 00	1.400E 00	-1.640E 02	-1.365E 03	-6.856E 02	-6.789E 02	3.280E 03	9.162E 00	1.407E-03	9.162E 00	1.407E-03
5.845E 01	1.400E 00	1.400E 00	-1.627E 02	-1.369E 03	-6.883E 02	-6.804E 02	3.309E 03	9.162E 00	1.407E-03	9.162E 00	1.407E-03
5.917E 01	1.400E 00	1.400E 00	-1.589E 02	-1.381E 03	-6.963E 02	-6.852E 02	3.402E 03	9.162E 00	1.407E-03	9.162E 00	1.407E-03
6.019E 01	1.200E 00	1.200E 00	-1.559E 02	-1.397E 03	-7.061E 02	-6.904E 02	3.532E 03	7.853E 00	1.206E-03	7.853E 00	1.206E-03
6.220E 01	1.325E 00	1.325E 00	-1.556E 02	-1.419E 03	-7.211E 02	-6.979E 02	3.790E 03	8.671E 00	1.332E-03	8.671E 00	1.332E-03
6.362E 01	1.444E 00	1.444E 00	-1.556E 02	-1.454E 03	-7.295E 02	-7.047E 02	3.972E 03	9.448E 00	1.451E-03	9.448E 00	1.451E-03

READING = 0089 BLOCK = 114 TIME = 290.373 MACH 7.2 PT = 994.749 TT = 3271.9

XARB	P-IR	P-OR	PDA	QOX	G-IR	Q-OR	CA-ALL	P-IR/PSO	P-IR/PTO	P-OR/PSO	P-OR/PTO
6.608E 01	2.701E 00	2.701E 00	-1.556E 02	-1.465E 03	-7.426E 02	-7.221E 02	4.289E 03	1.747E 01	2.715E-03	1.747E 01	2.715E-03
6.646E 01	1.760E 00	2.893E 00	-1.556E 02	-1.470E 03	-7.440E 02	-7.253E 02	4.337E 03	1.152E 01	1.769E-03	1.893E 01	2.908E-03
6.650E 01	1.760E 00	2.913E 00	-1.556E 02	-1.470E 03	-7.446E 02	-7.256E 02	4.342E 03	1.152E 01	1.769E-03	1.906E 01	2.928E-03
6.670E 01	1.843E 00	3.015E 00	-1.556E 02	-1.473E 03	-7.455E 02	-7.273E 02	4.368E 03	1.206E 01	1.853E-03	1.973E 01	3.031E-03
6.836E 01	2.535E 00	2.079E 00	-1.288E 02	-1.493E 03	-7.531E 02	-7.395E 02	4.584E 03	1.659E 01	2.548E-03	1.360E 01	2.089E-03
6.980E 01	1.195E 00	1.266E 00	-4.324E 01	-1.509E 03	-7.592E 02	-7.498E 02	4.761E 03	7.820E 00	1.201E-03	8.286E 00	1.273E-03
7.052E 01	1.165E 00	8.600E-01	-1.362E 01	-1.518E 03	-7.621E 02	-7.562E 02	4.849E 03	7.626E 00	1.171E-03	5.628E 00	8.645E-04
7.113E 01	1.140E 00	8.548E-01	8.828E 00	-1.526E 03	-7.646E 02	-7.611E 02	4.923E 03	7.460E 00	1.146E-03	5.594E 00	8.593E-04
7.251E 01	8.150E-01	8.430E-01	5.176E 01	-1.536E 03	-7.699E 02	-7.663E 02	5.069E 03	5.334E 00	8.193E-04	5.517E 00	8.475E-04
7.404E 01	6.055E-01	8.300E-01	8.853E 01	-1.547E 03	-7.748E 02	-7.726E 02	5.273E 03	3.963E 00	6.087E-04	5.432E 00	8.344E-04
7.419E 01	5.850E-01	7.717E-01	9.152E 01	-1.549E 03	-7.752E 02	-7.737E 02	5.291E 03	3.828E 00	5.881E-04	5.050E 00	7.757E-04
7.494E 01	5.796E-01	4.800E-01	1.122E 02	-1.557E 03	-7.771E 02	-7.803E 02	5.375E 03	3.793E 00	5.826E-04	3.141E 00	4.825E-04
7.494E 01	5.796E-01	4.784E-01	1.131E 02	-1.557E 03	-7.771E 02	-7.803E 02	5.375E 03	3.793E 00	5.826E-04	3.131E 00	4.810E-04
7.627E 01	5.700E-01	0.000	1.253E 02	-1.574E 03	-7.798E 02	-7.942E 02	5.427E 03	3.730E 00	5.730E-04	0.000	0.000
7.912E 01	3.100E-01	0.000	1.429E 02	-1.578E 03	-7.839E 02	-7.942E 02	5.525E 03	2.029E 00	3.116E-04	0.000	0.000
8.302E 01	2.800E-01	0.000	1.559E 02	-1.581E 03	-7.868E 02	-7.942E 02	5.630E 03	1.832E 00	2.815E-04	0.000	0.000
8.583E 01	2.700E-01	0.000	1.616E 02	-1.583E 03	-7.887E 02	-7.942E 02	5.685E 03	1.767E 00	2.714E-04	0.000	0.000
8.869E 01	3.650E-01	0.000	1.693E 02	-1.586E 03	-7.922E 02	-7.942E 02	5.707E 03	2.389E 00	3.669E-04	0.000	0.000
8.870E 01	3.652E-01	0.000	1.693E 02	-1.586E 03	-7.922E 02	-7.942E 02	5.707E 03	2.390E 00	3.671E-04	0.000	0.000

READING = 0089 BLOCK = 114 TIME = 290.373 MACH 7.2 PT = 994.749 TT = 3271.9 PAGE 6

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.542E 01	8.542E 01	2.344E-03	3.492E-02
4.041E 01	1.525E-01	8.557E 01	2.345E-03	3.495E-02
4.073E 01	4.897E 00	9.047E 01	2.363E-03	3.542E-02
4.122E 01	7.523E 00	9.799E 01	2.419E-03	3.610E-02
4.150E 01	4.286E 00	1.023E 02	2.461E-03	3.661E-02
4.246E 01	1.443E 01	1.167E 02	2.560E-03	3.627E-02
4.272E 01	3.740E 00	1.205E 02	2.575E-03	3.608E-02
4.278E 01	9.457E-01	1.214E 02	2.579E-03	3.600E-02
4.431E 01	2.147E 01	1.429E 02	2.658E-03	3.454E-02
4.480E 01	6.605E 00	1.495E 02	2.688E-03	3.461E-02
4.550E 01	9.384E 00	1.589E 02	2.725E-03	3.497E-02
4.622E 01	9.414E 00	1.683E 02	2.741E-03	3.425E-02
4.625E 01	5.058E-01	1.688E 02	3.536E-03	2.635E-02
4.626E 01	1.599E-01	1.689E 02	3.006E-03	3.060E-02
4.694E 01	9.436E 00	1.784E 02	2.906E-03	3.094E-02
4.731E 01	4.820E 00	1.832E 02	2.891E-03	3.049E-02
4.811E 01	9.769E 00	1.930E 02	2.876E-03	2.971E-02
4.874E 01	7.127E 00	2.001E 02	2.848E-03	2.344E-02
5.018E 01	1.610E 01	2.162E 02	3.610E-03	1.912E-02
5.019E 01	1.112E-01	2.163E 02	3.610E-03	1.912E-02
5.072E 01	5.131E 00	2.215E 02	2.885E-03	2.318E-02
5.213E 01	1.068E 01	2.321E 02	2.809E-03	2.307E-02
5.423E 01	1.412E 01	2.463E 02	2.834E-03	8.590E-03
5.473E 01	3.096E 00	2.494E 02	2.712E-03	1.276E-02
5.548E 01	4.264E 00	2.536E 02	2.698E-03	1.005E-02
5.576E 01	1.542E 00	2.552E 02	2.698E-03	1.011E-02
5.624E 01	1.235E 00	2.564E 02	2.621E-03	8.046E-03
5.767E 01	3.551E 00	2.599E 02	2.723E-03	6.682E-03
5.772E 01	2.234E-01	2.602E 02	2.615E-03	7.513E-03
5.786E 01	5.461E-01	2.607E 02	2.600E-03	7.259E-03
5.794E 01	3.169E-01	2.610E 02	2.616E-03	6.556E-03
5.822E 01	1.118E 00	2.622E 02	2.607E-03	6.258E-03
5.849E 01	9.005E-01	2.631E 02	2.600E-03	6.292E-03
5.917E 01	2.856E 00	2.659E 02	2.588E-03	6.223E-03
6.019E 01	4.243E 00	2.701E 02	2.915E-03	5.129E-03
6.220E 01	8.571E 00	2.787E 02	2.642E-03	5.868E-03
6.362E 01	5.839E 00	2.846E 02	2.590E-03	6.318E-03
6.608E 01	9.586E 00	2.941E 02	2.594E-03	9.852E-03
6.646E 01	1.343E 00	2.955E 02	2.622E-03	8.797E-03
6.650E 01	1.265E-01	2.956E 02	2.594E-03	8.721E-03
6.670E 01	5.759E-01	2.962E 02	2.601E-03	8.954E-03
6.836E 01	4.820E 00	3.010E 02	2.581E-03	8.606E-03
6.980E 01	3.291E 00	3.043E 02	2.458E-03	5.500E-03
7.052E 01	1.269E 00	3.056E 02	2.419E-03	4.771E-03
7.113E 01	9.996E-01	3.066E 02	2.415E-03	4.715E-03
7.251E 01	2.111E 00	3.087E 02	2.378E-03	4.115E-03
7.404E 01	2.101E 00	3.108E 02	2.344E-03	3.692E-03
7.419E 01	1.839E-01	3.110E 02	2.334E-03	3.542E-03
7.494E 01	8.187E-01	3.118E 02	2.290E-03	2.953E-03
7.494E 01	1.442E-03	3.118E 02	2.289E-03	2.950E-03
7.627E 01	4.727E-01	3.123E 02	2.296E-03	3.107E-03
7.912E 01	7.578E-01	3.130E 02	2.186E-03	1.977E-03
8.302E 01	6.245E-01	3.136E 02	2.155E-03	1.821E-03
8.583E 01	3.078E-01	3.139E 02	2.139E-03	1.763E-03
8.869E 01	1.399E-01	3.141E 02	2.176E-03	2.169E-03
8.870E 01	0.000	3.141E 02	2.176E-03	2.190E-03

ORIGINAL PAGE IS
OF POOR QUALITY

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	=192.	(LBF)
MEASURED THRUST	=154.	(LBF)
CALCULATED SPECIFIC IMPULSE	=569.	(LBF=SEC/LBM)
MEASURED SPECIFIC IMPULSE	=457.	(LBF=SEC/LBM)
CALCULATED THRUST COEFFICIENT	=.1342	
MEASURED THRUST COEFFICIENT	=.1076	

REGENERATIVE=COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	2709.	(LBF)
NET THRUST	=163.	(LBF)
SPECIFIC IMPULSE	=482.	(LBF=SEC/LBM)
THRUST COEFFICIENT	=.1136	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.4	(LBF)
INLET MOMENTUM CHANGE	=411.6	(LBF)
COMBUSTOR FRICTION DRAG	210.1	(LBF)
COMBUSTOR STRUT DRAG	1.58	(LBF)
COMBUSTOR MOMENTUM CHANGE	=87.	(LBF)
NOZZLE FRICTION DRAG	18.60	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	306.	(LBF)
NOZZLE PRESSURE INTEGRAL	325.	(LBF)
EXTERNAL FRICTION DRAG	50.42	(LBF)
EXTERNAL PRESSURE INTEGRAL	=663.	(LBF)
TOTAL EXTERNAL DRAG	=713.	(LBF)
TOTAL STRUT DRAG	1.58	(LBF)
CAVITY FORCE	=609.	(LBF)
CALCULATED LOAD CELL FORCE	=1514.	(LBF)
MEASURED LOAD CELL FORCE	=1476.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	=151.8, =122.4,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7210	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.605	(IN)
NOZZLE SHROUD TRAILING EDGE	74.945	(IN)
NOZZLE PLUG TRAILING EDGE	88.697	(IN)
STRUT LEADING EDGE	57.861	(IN)
STRUT TRAILING EDGE	66.461	(IN)
COMBUSTOR EXIT	66.461	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9896	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0992	
DELTA PT2	0.0886	(PSI)
TOTAL PRESSURE RECOVERY = SUPERSONIC	0.2972	
TOTAL PRESSURE RECOVERY = SUBSONIC	0.1005	
INLET PROCESS EFFICIENCY = SUPERSONIC	0.8969	
INLET PROCESS EFFICIENCY = SUBSONIC	0.9109	
KINETIC ENERGY EFFICIENCY = SUPERSONIC	0.9343	
KINETIC ENERGY EFFICIENCY = SUBSONIC	0.8867	
ENTHALPY AT P0 = SUPERSONIC	=23.57	(BTU/LBM)
ENTHALPY AT P0 = SUBSONIC	14.77	(BTU/LBM)

COMBUSTOR

FUEL=AIR RATIO	0.0235
EQUIVALENCE RATIO	0.745
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.1040
COMBUSTOR EFFECTIVENESS	0.1481
INJECTOR DISCHARGE COEFFICIENTS	0.8944, 0.7518,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT = CS	0.9939
NOZZLE COEFFICIENT = CT	0.9498
PROCESS EFFICIENCY	0.9995
KINETIC ENERGY EFFICIENCY	0.9872

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.706	
1C	44.300	
2A	50.181	C
2C	46.250	E
3A	55.471	
3B	57.656	
4	46.206	

Reading 89

t = 294.87 sec.

Injected fuel did not ignite.

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6														
0.000	994.499	3309	764.9(887)	1.2839	28.909	2703											
0.000	0.153	325	-51.1(78)	1.3972	28.908	884	7.231	6390	1.838	0.05610	14.211	0.9890	2861	5.571	201.3		
SPIKE TIP NS		2	0 6														
0.600	11.375	3308	764.9(887)	1.2827	28.907	2701											
0.600	10.545	3253	747.8(870)	1.2845	28.907	2681	0.345	925	2.145	0.05610	14.211	0.9890	3080	0.807	216.7		
WIND TUNNEL		3	0 0														
0.000	994.499	3309	764.9(887)	1.2839	28.909	2703											
0.000	0.173	337	-48.2(81)	1.3976	28.908	900	7.090	6379	1.838	0.06124	15.512	0.9890	3119	6.070	201.1		
SPIKE TIP NS		4	0 0														
0.600	11.375	3308	764.9(887)	1.2827	28.907	2701											
0.600	10.366	3240	744.0(867)	1.2850	28.907	2676	0.382	1023	2.145	0.06124	15.512	0.9890	3119	0.974	201.1		
INLET THROAT		5	0 3														
40.400	292.725	3231	741.0(864)	1.2861	28.909	2674											
40.400	10.853	1458	231.3(360)	1.3507	28.908	1840	2.744	5050	1.915	0.70321	14.211	0.0789	2450	55.191	172.4		
INLET UPNRBK		6	0 3														
40.400	292.725	3231	741.0(864)	1.2861	28.909	2674											
40.400	9.361	1403	216.8(346)	1.3539	28.908	1807	2.834	5122	1.915	0.63929	14.211	0.0868	2470	50.884	173.8		
INLET DNNRBK		7	0 4														
40.400	99.539	3231	741.0(864)	1.2860	28.908	2673											
40.400	86.560	3132	710.4(835)	1.2891	28.908	2635	0.469	1237	1.989	0.63929	14.211	0.0868	2470	12.285	173.8		
COMBUSTOR		0 8	1 3														
40.410	292.416	3231	740.9(864)	1.2861	28.909	2673											
40.410	10.857	1459	231.4(360)	1.3507	28.908	1841	2.743	5049	1.915	0.70312	14.211	0.0789	2450	55.174	172.4		
COMBUSTOR		0 9	2 3														
40.731	284.025	3225	738.9(862)	1.2863	28.909	2671											
40.731	11.077	1474	235.5(365)	1.3499	28.908	1850	2.713	5019	1.916	0.70572	14.211	0.0786	2440	55.008	171.7		
COMBUSTOR		0 10	3 4														
41.221	257.574	3215	735.8(859)	1.2866	28.909	2667											
41.221	11.535	1522	248.2(377)	1.3472	28.908	1878	2.630	4939	1.922	0.70039	14.211	0.0792	2416	53.762	170.0		
COMBUSTOR		0 11	4 4														
41.500	235.674	3209	734.0(857)	1.2868	28.909	2665											
41.500	11.934	1567	260.4(389)	1.3447	28.908	1904	2.557	4868	1.928	0.69342	14.211	0.0800	2395	52.456	168.5		
COMBUSTOR		0 12	5 5														
42.460	189.231	3188	727.6(851)	1.2874	28.909	2657											
42.460	12.334	1659	285.2(414)	1.3401	28.908	1956	2.406	4705	1.941	0.65430	14.211	0.0848	2346	47.843	165.1		
COMBUSTOR		0 13	6 5														
42.716	182.606	3183	725.9(850)	1.2876	28.909	2655											
42.716	12.341	1671	288.5(418)	1.3395	28.908	1962	2.384	4679	1.943	0.64628	14.211	0.0858	2338	46.992	164.5		
COMBUSTOR		0 14	7 5														
42.781	180.700	3181	725.5(849)	1.2876	28.909	2654											
42.781	12.330	1675	289.3(418)	1.3393	28.908	1964	2.379	4672	1.943	0.64349	14.211	0.0862	2336	46.720	164.4		
COMBUSTOR		0 15	8 4														
44.310	147.360	3152	716.4(840)	1.2885	28.908	2643											
44.310	12.251	1742	307.6(437)	1.3363	28.908	2001	2.261	4523	1.954	0.59512	14.211	0.0932	2290	41.830	161.2		
COMBUSTOR		0 16	9 4														
44.800	139.237	3143	713.7(838)	1.2888	28.908	2639											
44.800	12.439	1768	314.8(444)	1.3351	28.908	2015	2.217	4468	1.957	0.58806	14.211	0.0943	2274	40.030	160.0		
COMBUSTOR		0 17	10 4														
45.501	130.680	3130	709.8(834)	1.2892	28.908	2634											
45.501	12.803	1801	323.9(453)	1.3337	28.908	2033	2.162	4394	1.960	0.58437	14.211	0.0949	2252	39.907	158.5		
COMBUSTOR		0 18	11 4														
46.216	123.276	3117	705.8(830)	1.2896	28.908	2629											
46.216	12.667	1814	327.5(456)	1.3332	28.908	2040	2.133	4351	1.963	0.56829	14.211	0.0976	2238	38.425	157.5		

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHT	ETAC
COMBUSTOR	0	19	12 21														
46.250	69.595	2993	731.5(939)	1.2977	24.262	2821											
46.250	10.306	1889	354.9(566)	1.3358	24.262	2274	1.909	4341	2.295	0.57554	14.426	0.0979	2205	38.826	152.8	0.48	0.07
COMBUSTOR	0	20	13 21														
46.260	76.212	2850	731.4(891)	1.3044	24.125	2768											
46.260	10.307	1735	355.0(518)	1.3436	24.125	2192	1.980	4340	2.272	0.57519	14.426	0.0979	2205	38.795	152.8	0.48	0.01
COMBUSTOR	0	21	14 21														
46.941	76.246	2818	727.6(881)	1.3058	24.104	2755											
46.941	10.351	1726	359.5(515)	1.3442	24.104	2188	1.962	4291	2.270	0.54757	14.426	0.1029	2197	36.518	152.3	0.48	0.00
COMBUSTOR	0	22	15 21														
47.310	74.435	2809	725.4(877)	1.3062	24.101	2751											
47.310	10.283	1727	361.1(515)	1.3442	24.101	2189	1.951	4270	2.271	0.53302	14.426	0.1057	2193	35.368	152.0	0.48	0.00
COMBUSTOR	0	23	16 21														
48.110	69.712	2795	720.9(873)	1.3066	24.101	2745											
48.110	9.545	1714	357.1(511)	1.3447	24.101	2181	1.956	4266	2.275	0.48998	14.426	0.1150	2194	32.487	152.1	0.48	0.00
COMBUSTOR	0	24	17 21														
48.741	43.040	3262	717.3(1027)	1.2839	24.568	2911											
48.741	7.175	2148	329.6(646)	1.3224	24.570	2398											
							1.837	4404	2.355	0.44599	14.426	0.1263	2207	30.528	153.0	0.48	0.21
COMBUSTOR	0	25	18 21														
50.181	40.402	2775	732.7(980)	1.3091	21.235	2916											
50.181	7.593	1840	375.9(625)	1.3423	21.235	2405	1.757	4225	2.567	0.36773	14.618	0.1552	2222	24.148	152.0	0.92	0.05
COMBUSTOR	0	26	19 21														
50.191	45.908	2608	732.7(918)	1.3168	21.099	2845											
50.191	7.596	1662	375.9(563)	1.3514	21.098	2301	1.837	4225	2.535	0.36726	14.618	0.1554	2222	24.114	152.0	0.92	0.01
COMBUSTOR	0	27	20 21														
50.721	46.773	2579	730.8(907)	1.3181	21.078	2831											
50.721	7.750	1642	378.2(556)	1.3525	21.078	2288	1.836	4201	2.529	0.34347	14.618	0.1662	2238	22.423	153.1	0.92	0.00
COMBUSTOR	0	28	21 21														
52.131	46.501	2565	726.7(902)	1.3186	21.075	2824											
52.131	8.112	1654	384.0(560)	1.3520	21.075	2297	1.803	4141	2.527	0.29273	14.618	0.1950	2286	18.837	156.4	0.92	0.00
COMBUSTOR	0	29	22 21														
54.231	28.753	2544	719.9(897)	1.3194	20.993	2820											
54.231	1.975	1280	250.4(429)	1.3701	20.993	2038	2.378	4847	2.578	0.24050	14.653	0.2379	2328	18.115	158.9	0.92	0.00
COMBUSTOR	0	30	23 21														
54.731	36.759	2537	718.8(894)	1.3197	20.989	2816											
54.731	3.362	1378	286.6(463)	1.3652	20.989	2111	2.203	4650	2.553	0.23067	14.653	0.2480	2331	16.670	159.1	0.92	0.00
COMBUSTOR	0	31	24 21														
55.481	34.349	2533	717.3(893)	1.3198	20.989	2814											
55.481	2.835	1338	272.7(449)	1.3672	20.989	2082	2.266	4717	2.559	0.21744	14.653	0.2631	2339	15.938	159.6	0.92	0.00
COMBUSTOR	0	32	25 21														
55.760	33.311	2531	716.8(892)	1.3199	20.989	2813											
55.760	2.638	1322	267.3(444)	1.3680	20.988	2070	2.291	4743	2.562	0.21293	14.653	0.2687	2341	15.693	159.8	0.92	0.00
COMBUSTOR	0	33	26 21														
56.241	23.122	2660	715.9(940)	1.3138	21.094	2870											
56.241	1.869	1408	246.9(473)	1.3625	21.095	2126	2.278	4844	2.613	0.16822	14.653	0.3401	2369	12.664	161.7	0.92	0.03
COMBUSTOR	0	34	27 21														
57.666	25.626	2542	713.5(896)	1.3192	21.004	2818											
57.666	1.652	1258	237.0(421)	1.3711	21.004	2020	2.417	4883	2.588	0.15553	14.653	0.3678	2379	11.802	162.4	0.92	0.01
COMBUSTOR	0	35	28 21														
57.721	27.228	2525	713.4(890)	1.3200	20.991	2810											
57.721	1.801	1257	243.1(421)	1.3713	20.991	2020	2.401	4851	2.580	0.15501	14.653	0.3691	2380	11.687	162.4	0.92	0.00
COMBUSTOR	0	36	29 21														
57.861	27.100	2522	713.2(889)	1.3201	20.989	2808											
57.861	1.749	1250	241.9(419)	1.3714	20.989	2016	2.409	4856	2.580	0.15395	14.653	0.3716	2380	11.619	162.4	0.92	0.00
COMBUSTOR	0	37	30 21														
57.941	25.550	2524	713.1(890)	1.3200	20.991	2809											
57.941	1.527	1222	231.0(409)	1.3730	20.991	1994	2.464	4911	2.586	0.15568	14.653	0.3675	2380	11.882	162.5	0.92	0.00

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                 P       T       H            GAMMA  MOLWT SONV  MACH  VEL   S      W/A      .      A/AC    MOPTK   F      IVAC  PHI  ETAC
COMBUSTOR          0    38   31  21
58.221      24.672 2521   712.6( 888) 1.3202 20.989 2868
58.221       1.400 1203   225.3( 402) 1.3740 20.989 1979 2.496 4938 2.589 0.15525 14.653 0.3685   2381 11.914 162.5 0.92 0.00
COMBUSTOR          0    39   32  21
58.447      24.728 2520   712.3( 888) 1.3202 20.989 2807
58.447       1.400 1202   225.0( 401) 1.3741 20.989 1978 2.497 4938 2.588 0.15484 14.653 0.3695   2382 11.884 162.5 0.92 0.00
COMBUSTOR          0    40   33  21
59.171      12.626 3046   711.3(1084) 1.2950 21.427 3025
59.171       1.400 1783   224.6( 602) 1.3410 21.428 2355 2.095 4935 2.707 0.15244 14.653 0.3753   2382 11.692 162.6 0.92 0.14
COMBUSTOR          0    41   34  21
60.191      19.679 2594   710.2( 915) 1.3167 21.053 2840
60.191       1.175 1261   215.1( 421) 1.3704 21.053 2020 2.464 4977 2.620 0.15147 14.653 0.3777   2380 11.717 162.5 0.92 0.02
COMBUSTOR          0    42   35  21
62.201      24.117 2521   708.2( 888) 1.3200 20.998 2807
62.201       1.425 1217   225.6( 407) 1.3732 20.998 1989 2.471 4914 2.591 0.15674 14.653 0.3650   2371 11.970 161.8 0.92 0.00
COMBUSTOR          0    43   36  21
63.621      27.780 2507   706.7( 883) 1.3206 20.990 2800
63.621       1.894 1257   243.5( 421) 1.3713 20.990 2020 2.383 4814 2.575 0.16099 14.653 0.3593   2365 12.045 161.4 0.92 0.00
COMBUSTOR          0    44   37  21
66.085      29.256 2498   703.9( 880) 1.3209 20.989 2796
66.085       2.821 1374   285.5( 462) 1.3654 20.989 2108 2.170 4576 2.569 0.15260 14.653 0.3749   2355 10.852 160.7 0.92 0.00
COMBUSTOR          0    45   38  21
66.461      26.587 2497   703.5( 879) 1.3210 20.989 2795
66.461       2.361 1340   274.7( 451) 1.3670 20.989 2086 2.221 4632 2.578 0.14187 14.653 0.4032   2353 10.213 160.6 0.92 0.00
COMBUSTOR  REGEN  46    39   4
66.461      26.587 2506   706.9( 882) 1.3207 20.989 2800
66.461       3.686 1518   336.9( 513) 1.3584 20.989 2210 1.947 4303 2.579 0.14187 14.653 0.4032   2340  9.487 159.7 0.92 0.00
NOZZLE   AE       47    40   4
88.697      26.587 2497   703.5( 879) 1.3210 20.989 2795
88.697       0.291  763    72.1( 249) 1.3939 20.989 1577 3.564 5621 2.578 0.02953 14.653 1.0372   2704  2.580 184.6 0.92 0.00
NOZZLE   PO       48    41   4
88.697      26.587 2497   703.5( 879) 1.3210 20.989 2795
88.697       0.153  627    29.9( 206) 1.3980 20.989 1441 4.029 5806 2.578 0.01919 14.653 2.9818   2760  1.731 188.4 0.92 0.00
NOZZLE   AE REGEN 49    42   4
88.697      26.587 2506   706.9( 882) 1.3207 20.989 2800
88.697       0.292  757    73.4( 250) 1.3938 20.989 1581 3.561 5630 2.579 0.02953 14.653 1.0372   2709  2.584 184.9 0.92 0.00
NOZZLE   PO REGEN 50    43   4
88.697      26.587 2506   706.9( 882) 1.3207 20.989 2800
88.697       0.153  629    30.8( 207) 1.3980 20.989 1444 4.029 5816 2.579 0.01914 14.653 2.9883   2768  1.730 188.7 0.92 0.00
FICTIVE COMBUSTR  68    61   0
66.461     292.725 5511   703.5(2044) 1.1602 23.919 3646
66.461       0.183 1273-1233.7( 385) 1.3347 24.014 1853 5.315 9646 2.542 0.01879 14.683 5.0445   4603  2.875 314.1 0.92 1.00
FICTIVE NOZZLE    69    62   0
88.697      40.636 2473   694.0( 870) 1.3218 20.989 2783
88.697       0.233  620    27.6( 204) 1.3982 20.989 1433 4.030 5775 2.534 0.02953 14.653 1.9371   2746  2.650 187.4 0.92 0.00
```

XARB	P-IR	P-OR	PCA	QQX	Q-IR	Q-OR	CA*ALL	P-IR/P80	P-IR/PT0	P-OR/P80	P-OR/PT0
6.981E-01	6.900E-01	0.000	-2.747E-01	0.000	0.000	0.000	2.470E-02	4.524E 00	6.938E-04	0.000	0.000
1.036E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.524E 00	6.938E-04	0.000	0.000
3.070E 01	1.140E 00	0.000	-9.714E 01	0.000	0.000	0.000	5.053E 02	7.474E 00	1.146E-03	0.000	0.000
3.508E 01	2.004E 00	0.000	-1.990E 02	0.000	0.000	0.000	6.404E 02	1.314E 01	2.015E-03	0.000	0.000
3.555E 01	2.160E 00	0.000	-2.180E 02	0.000	0.000	0.000	7.013E 02	1.416E 01	2.172E-03	0.000	0.000
3.606E 01	2.050E 00	0.000	-2.394E 02	-1.218E 02	-1.218E 02	0.000	7.246E 02	1.344E 01	2.061E-03	0.000	0.000
3.648E 01	2.279E 00	0.000	-2.579E 02	-1.248E 02	-1.248E 02	0.000	7.443E 02	1.494E 01	2.291E-03	0.000	0.000
3.560E 01	2.294E 00	3.254E 00	-2.972E 02	-1.256E 02	-1.256E 02	0.000	7.499E 02	1.504E 01	2.306E-03	2.133E 01	3.272E-03
3.660E 01	2.294E 00	3.272E 00	-2.972E 02	-1.257E 02	-1.257E 02	0.000	7.502E 02	1.504E 01	2.307E-03	2.145E 01	3.290E-03
3.701E 01	2.345E 00	4.490E 00	-2.986E 02	-1.287E 02	-1.287E 02	0.000	7.922E 02	1.537E 01	2.358E-03	2.944E 01	4.515E-03
3.727E 01	2.252E 00	5.275E 00	-2.975E 02	-1.307E 02	-1.307E 02	0.000	8.196E 02	1.476E 01	2.264E-03	3.459E 01	5.304E-03
3.803E 01	1.980E 00	8.300E 00	-2.794E 02	-1.369E 02	-1.369E 02	0.000	9.012E 02	1.298E 01	1.991E-03	5.442E 01	8.346E-03
3.873E 01	6.500E 00	1.109E 01	-2.777E 02	-2.058E 02	-1.451E 02	-6.076E 01	9.794E 02	4.262E 01	6.536E-03	7.274E 01	1.116E-02
3.875E 01	6.623E 00	1.104E 01	-2.779E 02	-2.072E 02	-1.453E 02	-6.193E 01	9.815E 02	4.343E 01	6.660E-03	7.240E 01	1.110E-02
3.901E 01	8.300E 00	1.034E 01	-2.830E 02	-2.260E 02	-1.496E 02	-7.643E 01	1.011E 03	5.442E 01	8.346E-03	6.779E 01	1.040E-02
3.950E 01	1.130E 01	9.016E 00	-3.006E 02	-2.635E 02	-1.597E 02	-1.039E 02	1.067E 03	7.410E 01	1.137E-02	5.911E 01	9.066E-03
3.975E 01	1.095E 01	8.337E 00	-3.098E 02	-2.838E 02	-1.660E 02	-1.179E 02	1.096E 03	7.181E 01	1.101E-02	5.466E 01	8.384E-03
4.000E 01	1.061E 01	8.059E 00	-3.161E 02	-3.048E 02	-1.730E 02	-1.317E 02	1.129E 03	6.954E 01	1.066E-02	5.284E 01	8.104E-03
4.022E 01	1.111E 01	7.813E 00	-3.220E 02	-3.239E 02	-1.799E 02	-1.440E 02	1.151E 03	7.287E 01	1.117E-02	5.122E 01	7.856E-03
4.040E 01	1.152E 01	8.870E 00	-3.261E 02	-3.395E 02	-1.856E 02	-1.539E 02	1.171E 03	7.556E 01	1.159E-02	5.816E 01	8.919E-03
4.041E 01	1.155E 01	8.929E 00	-3.262E 02	-3.404E 02	-1.859E 02	-1.545E 02	1.173E 03	7.571E 01	1.161E-02	5.854E 01	8.978E-03
4.073E 01	1.228E 01	1.082E 01	-3.310E 02	-3.689E 02	-1.967E 02	-1.722E 02	1.210E 03	8.054E 01	1.235E-02	7.097E 01	1.088E-02
4.122E 01	1.341E 01	1.962E 00	-3.478E 02	-4.133E 02	-2.144E 02	-1.990E 02	1.268E 03	8.792E 01	1.348E-02	1.287E 01	1.973E-03
4.150E 01	1.405E 01	2.026E 00	-3.645E 02	-4.391E 02	-2.253E 02	-2.139E 02	1.301E 03	9.212E 01	1.413E-02	1.328E 01	2.037E-03
4.246E 01	6.750E 00	2.245E 00	-3.987E 02	-5.297E 02	-2.653E 02	-2.644E 02	1.415E 03	4.426E 01	6.787E-03	1.472E 01	2.258E-03
4.272E 01	7.363E 00	2.304E 00	-4.031E 02	-5.535E 02	-2.763E 02	-2.772E 02	1.449E 03	4.827E 01	7.403E-03	1.511E 01	2.317E-03
4.278E 01	7.518E 00	2.319E 00	-4.043E 02	-5.593E 02	-2.791E 02	-2.802E 02	1.453E 03	4.929E 01	7.560E-03	1.520E 01	2.332E-03
4.431E 01	1.118E 01	5.555E 00	-4.254E 02	-6.866E 02	-3.401E 02	-3.465E 02	1.637E 03	7.328E 01	1.124E-02	3.642E 01	5.585E-03
4.480E 01	1.235E 01	6.592E 00	-4.381E 02	-7.278E 02	-3.581E 02	-3.697E 02	1.697E 03	8.097E 01	1.242E-02	4.322E 01	6.628E-03
4.550E 01	1.244E 01	8.075E 00	-4.503E 02	-7.831E 02	-3.829E 02	-4.003E 02	1.783E 03	8.157E 01	1.251E-02	5.294E 01	8.120E-03
4.622E 01	1.253E 01	8.075E 00	-4.547E 02	-8.400E 02	-4.073E 02	-4.327E 02	1.870E 03	8.217E 01	1.260E-02	5.294E 01	8.120E-03
4.625E 01	1.254E 01	8.075E 00	-4.547E 02	-8.427E 02	-4.084E 02	-4.343E 02	1.874E 03	8.220E 01	1.261E-02	5.294E 01	8.120E-03
4.626E 01	1.254E 01	8.075E 00	-4.547E 02	-8.436E 02	-4.087E 02	-4.348E 02	1.875E 03	8.221E 01	1.261E-02	5.294E 01	8.120E-03
4.694E 01	1.263E 01	8.075E 00	-4.528E 02	-8.994E 02	-4.311E 02	-4.684E 02	1.959E 03	8.279E 01	1.270E-02	5.294E 01	8.120E-03
4.731E 01	1.267E 01	7.890E 00	-4.521E 02	-9.301E 02	-4.429E 02	-4.872E 02	2.005E 03	8.310E 01	1.275E-02	5.173E 01	7.934E-03
4.811E 01	1.160E 01	7.490E 00	-4.409E 02	-9.959E 02	-4.677E 02	-5.282E 02	2.104E 03	7.606E 01	1.166E-02	4.911E 01	7.532E-03
4.874E 01	7.175E 00	7.175E 00	-4.208E 02	-1.047E 03	-4.865E 02	-5.607E 02	2.183E 03	4.704E 01	7.215E-03	4.704E 01	7.215E-03
5.018E 01	7.593E 00	7.593E 00	-3.660E 02	-1.145E 03	-5.270E 02	-6.178E 02	2.363E 03	4.978E 01	7.635E-03	4.978E 01	7.635E-03
5.019E 01	7.596E 00	7.596E 00	-3.656E 02	-1.145E 03	-5.272E 02	-6.181E 02	2.364E 03	4.980E 01	7.638E-03	4.980E 01	7.638E-03
5.072E 01	7.750E 00	7.750E 00	-3.444E 02	-1.172E 03	-5.413E 02	-6.305E 02	2.430E 03	5.081E 01	7.793E-03	5.081E 01	7.793E-03
5.213E 01	8.112E 00	8.112E 00	-2.857E 02	-1.233E 03	-5.764E 02	-6.561E 02	2.608E 03	5.319E 01	8.157E-03	5.319E 01	8.157E-03
5.423E 01	1.975E 00	1.975E 00	-2.302E 02	-1.309E 03	-6.228E 02	-6.862E 02	2.874E 03	1.295E 01	1.986E-03	1.295E 01	1.986E-03
5.473E 01	3.362E 00	3.362E 00	-2.233E 02	-1.324E 03	-6.328E 02	-6.916E 02	2.938E 03	2.205E 01	3.381E-03	2.205E 01	3.381E-03
5.548E 01	2.835E 00	2.835E 00	-2.113E 02	-1.346E 03	-6.470E 02	-6.995E 02	3.034E 03	1.859E 01	2.850E-03	1.859E 01	2.850E-03
5.576E 01	2.638E 00	2.638E 00	-2.074E 02	-1.354E 03	-6.521E 02	-7.023E 02	3.069E 03	1.730E 01	2.653E-03	1.730E 01	2.653E-03
5.624E 01	1.437E 00	2.300E 00	-1.785E 02	-1.367E 03	-6.603E 02	-7.072E 02	3.102E 03	9.425E 00	1.445E-03	1.508E 01	2.313E-03
5.767E 01	1.652E 00	1.652E 00	-1.644E 02	-1.402E 03	-6.815E 02	-7.208E 02	3.209E 03	1.083E 01	1.661E-03	1.083E 01	1.661E-03
5.772E 01	1.975E 00	1.627E 00	-1.640E 02	-1.404E 03	-6.822E 02	-7.213E 02	3.217E 03	1.295E 01	1.986E-03	1.067E 01	1.636E-03
5.786E 01	1.975E 00	1.564E 00	-1.629E 02	-1.407E 03	-6.841E 02	-7.226E 02	3.234E 03	1.295E 01	1.986E-03	1.025E 01	1.572E-03
5.794E 01	1.527E 00	1.527E 00	-1.623E 02	-1.409E 03	-6.852E 02	-7.233E 02	3.245E 03	1.001E 01	1.536E-03	1.001E 01	1.536E-03
5.822E 01	1.400E 00	1.400E 00	-1.604E 02	-1.415E 03	-6.888E 02	-7.258E 02	3.280E 03	9.179E 00	1.408E-03	9.179E 00	1.408E-03
5.845E 01	1.400E 00	1.400E 00	-1.590E 02	-1.419E 03	-6.916E 02	-7.277E 02	3.309E 03	9.179E 00	1.408E-03	9.179E 00	1.408E-03
5.917E 01	1.400E 00	1.400E 00	-1.552E 02	-1.434E 03	-7.001E 02	-7.335E 02	3.402E 03	9.179E 00	1.408E-03	9.179E 00	1.408E-03
6.019E 01	1.175E 00	1.175E 00	-1.523E 02	-1.450E 03	-7.104E 02	-7.399E 02	3.532E 03	7.704E 00	1.181E-03	7.704E 00	1.181E-03
6.220E 01	1.425E 00	1.425E 00	-1.520E 02	-1.480E 03	-7.267E 02	-7.532E 02	3.790E 03	9.343E 00	1.433E-03	9.343E 00	1.433E-03
6.362E 01	1.894E 00	1.894E 00	-1.520E 02	-1.502E 03	-7.369E 02	-7.648E 02	3.972E 03	1.242E 01	1.904E-03	1.242E 01	1.904E-03

XAMB	P-IP	P-OH	PPA	QUX	Q-IR	Q-OH	CA-ALI	P-TH/PSO	P-IP/PTO	P-OH/PSO	P-UP/PTO
6.608E 01	2.821E 00	2.821E 00	-1.520E 02	-1.542E 03	-7.564E 02	-7.858E 02	4.289E 03	1.649E 01	2.836E-03	1.849E 01	2.836E-03
6.646E 01	1.760E 00	2.962E 00	-1.520E 02	-1.549E 03	-7.596E 02	-7.893E 02	4.337E 03	1.154E 01	1.770E-03	1.942E 01	2.979E-03
6.650E 01	1.760E 00	2.977E 00	-1.520E 02	-1.550E 03	-7.599E 02	-7.896E 02	4.342E 03	1.154E 01	1.770E-03	1.952E 01	2.994E-03
6.670E 01	1.844E 00	3.052E 00	-1.520E 02	-1.553E 03	-7.616E 02	-7.915E 02	4.368E 03	1.209E 01	1.859E-03	2.001E 01	3.069E-03
6.836E 01	2.545E 00	2.854E 00	-1.224E 02	-1.578E 03	-7.731E 02	-8.045E 02	4.584E 03	1.669E 01	2.559E-03	1.871E 01	2.869E-03
6.980E 01	1.220E 00	2.681E 00	-1.246E 01	-1.596E 03	-7.801E 02	-8.178E 02	4.761E 03	7.999E 00	1.227E-03	1.758E 01	2.696E-03
7.052E 01	1.136E 00	2.595E 00	3.472E 01	-1.611E 03	-7.830E 02	-8.283E 02	4.849E 03	7.449E 00	1.142E-03	1.701E 01	2.609E-03
7.113E 01	1.065E 00	2.291E 00	7.167E 01	-1.622E 03	-7.854E 02	-8.369E 02	4.923E 03	6.983E 00	1.071E-03	1.502E 01	2.304E-03
7.251E 01	7.850E-01	1.603E 00	1.349E 02	-1.637E 03	-7.908E 02	-8.458E 02	5.069E 03	5.147E 00	7.893E-04	1.051E 01	1.612E-03
7.404E 01	6.029E-01	8.400E-01	1.791E 02	-1.648E 03	-7.959E 02	-8.524E 02	5.273E 03	3.953E 00	6.062E-04	5.507E 00	8.446E-04
7.419E 01	5.850E-01	7.800E-01	1.821E 02	-1.650E 03	-7.963E 02	-8.539E 02	5.291E 03	3.836E 00	5.882E-04	5.114E 00	7.843E-04
7.494E 01	5.796E-01	4.800E-01	2.029E 02	-1.658E 03	-7.982E 02	-8.600E 02	5.375E 03	3.800E 00	5.828E-04	3.147E 00	4.827E-04
7.494E 01	5.796E-01	4.784E-01	2.038E 02	-1.658E 03	-7.982E 02	-8.600E 02	5.375E 03	3.600E 00	5.828E-04	3.137E 00	4.810E-04
7.627E 01	5.700E-01	0.000	2.160E 02	-1.675E 03	-8.010E 02	-8.737E 02	5.427E 03	3.737E 00	5.732E-04	0.000	0.000
7.912E 01	3.150E-01	0.000	2.337E 02	-1.679E 03	-8.051E 02	-8.737E 02	5.525E 03	2.065E 00	3.167E-04	0.000	0.000
8.302E 01	2.900E-01	0.000	2.466E 02	-1.682E 03	-8.080E 02	-8.737E 02	5.630E 03	1.901E 00	2.916E-04	0.000	0.000
8.583E 01	2.700E-01	0.000	2.528E 02	-1.684E 03	-8.099E 02	-8.737E 02	5.685E 03	1.770E 00	2.715E-04	0.000	0.000
8.869E 01	3.750E-01	0.000	2.606E 02	-1.687E 03	-8.133E 02	-8.737E 02	5.707E 03	2.459E 00	3.771E-04	0.000	0.000
8.870E 01	3.752E-01	0.000	2.606E 02	-1.687E 03	-8.133E 02	-8.737E 02	5.707E 03	2.460E 00	3.773E-04	0.000	0.000

HEADING = 0039 BLOCK = 119 TIME = 294.873 MACH 7.2 PT = 994.499 TT = 5304.6

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.429E 01	8.529E 01	2.359E-03	3.490E-02
4.041E 01	1.528E-01	8.544E 01	2.360E-03	3.492E-02
4.073E 01	4.905E 00	9.034E 01	2.370E-03	3.539E-02
4.122E 01	7.533E 00	9.788E 01	2.429E-03	3.606E-02
4.150E 01	4.290E 00	1.022E 02	2.475E-03	3.656E-02
4.246E 01	1.444E 01	1.166E 02	2.574E-03	3.626E-02
4.272E 01	3.741E 00	1.203E 02	2.588E-03	3.600E-02
4.278E 01	9.458E-01	1.213E 02	2.593E-03	3.592E-02
4.431E 01	2.146E 01	1.426E 02	2.659E-03	3.441E-02
4.480E 01	6.601E 00	1.494E 02	2.697E-03	3.445E-02
4.550E 01	9.376E 00	1.587E 02	2.733E-03	3.477E-02
4.622E 01	9.405E 00	1.681E 02	2.750E-03	3.407E-02
4.625E 01	5.132E-01	1.687E 02	3.666E-03	2.621E-02
4.626E 01	1.630E-01	1.688E 02	3.072E-03	3.105E-02
4.694E 01	9.517E 00	1.783E 02	2.957E-03	3.164E-02
4.731E 01	4.842E 00	1.832E 02	2.941E-03	3.138E-02
4.811E 01	9.868E 00	1.930E 02	2.928E-03	2.919E-02
4.874E 01	7.213E 00	2.003E 02	2.905E-03	2.352E-02
5.018E 01	1.645E 01	2.167E 02	3.785E-03	1.929E-02
5.019E 01	1.043E-01	2.168E 02	3.122E-03	2.350E-02
5.072E 01	4.705E 00	2.215E 02	2.960E-03	2.449E-02
5.213E 01	1.069E 01	2.322E 02	2.878E-03	2.462E-02
5.423E 01	1.427E 01	2.465E 02	2.921E-03	8.848E-03
5.473E 01	3.163E 00	2.496E 02	2.786E-03	1.305E-02
5.548E 01	4.343E 00	2.540E 02	2.773E-03	1.144E-02
5.576E 01	1.566E 00	2.555E 02	2.772E-03	1.063E-02
5.624E 01	1.263E 00	2.568E 02	2.720E-03	8.006E-03
5.767E 01	3.672E 00	2.605E 02	2.855E-03	6.943E-03
5.772E 01	2.303E-01	2.607E 02	2.712E-03	7.642E-03
5.786E 01	5.596E-01	2.613E 02	2.692E-03	7.573E-03
5.794E 01	3.256E-01	2.616E 02	2.723E-03	6.769E-03
5.822E 01	1.153E 00	2.628E 02	2.710E-03	6.368E-03
5.845E 01	9.282E-01	2.637E 02	2.701E-03	6.364E-03
5.917E 01	2.943E 00	2.666E 02	2.689E-03	6.335E-03
6.019E 01	4.997E 00	2.712E 02	3.320E-03	4.790E-03
6.220E 01	9.318E 00	2.805E 02	2.782E-03	6.221E-03
6.362E 01	5.952E 00	2.865E 02	2.660E-03	7.836E-03
6.608E 01	9.644E 00	2.961E 02	2.669E-03	1.032E-02
6.646E 01	1.363E 00	2.975E 02	2.698E-03	9.040E-03
6.650E 01	1.851E-01	2.976E 02	2.664E-03	8.934E-03
6.670E 01	5.493E-01	2.982E 02	2.669E-03	9.134E-03
6.836E 01	4.767E 00	3.029E 02	2.680E-03	9.721E-03
6.980E 01	3.684E 00	3.066E 02	2.609E-03	7.763E-03
7.052E 01	1.653E 00	3.083E 02	2.593E-03	7.508E-03
7.113E 01	1.335E 00	3.096E 02	2.574E-03	6.973E-03
7.251E 01	2.652E 00	3.123E 02	2.510E-03	5.481E-03
7.404E 01	2.294E 00	3.146E 02	2.413E-03	3.811E-03
7.419E 01	1.789E-01	3.147E 02	2.403E-03	3.660E-03
7.494E 01	7.961E-01	3.155E 02	2.358E-03	3.044E-03
7.494E 01	1.402E-03	3.155E 02	2.357E-03	3.040E-03
7.627E 01	4.592E-01	3.160E 02	2.364E-03	3.200E-03
7.912E 01	7.410E-01	3.167E 02	2.255E-03	2.069E-03
8.302E 01	6.206E-01	3.173E 02	2.227E-03	1.933E-03
8.583E 01	3.144E-01	3.177E 02	2.205E-03	1.824E-03
8.869E 01	1.379E-01	3.178E 02	2.246E-03	2.306E-03
8.870E 01	0.000	3.178E 02	2.246E-03	2.307E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-116.	(LBF)
MEASURED THRUST	-125.	(LBF)
CALCULATED SPECIFIC IMPULSE	-279.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-302.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.0810	
MEASURED THRUST COEFFICIENT	-.0879	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	2751.	(LBF)
NET THRUST	-111.	(LBF)
SPECIFIC IMPULSE	-267.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.0776	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.3	(LBF)
INLET MOMENTUM CHANGE	-411.4	(LBF)
COMBUSTOR FRICTION DRAG	212.2	(LBF)
COMBUSTOR STRUT DRAG	1.41	(LBF)
COMBUSTOR MOMENTUM CHANGE	-96.	(LBF)
NOZZLE FRICTION DRAG	20.30	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	392.	(LBF)
NOZZLE PRESSURE INTEGRAL	413.	(LBF)
EXTERNAL FRICTION DRAG	50.51	(LBF)
EXTERNAL PRESSURE INTEGRAL	-663.	(LBF)
TOTAL EXTERNAL DRAG	-713.	(LBF)
TOTAL STRUT DRAG	1.41	(LBF)
CAVITY FORCE	-595.	(LBF)
CALCULATED LOAD CELL FORCE	-1424.	(LBF)
MEASURED LOAD CELL FORCE	-1434.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	-154.3, -123.8,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7210	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.605	(IN)
NOZZLE SHROUD TRAILING EDGE	74.945	(IN)
NOZZLE PLUG TRAILING EDGE	88.697	(IN)
STRUT LEADING EDGE	57.861	(IN)
STRUT TRAILING EDGE	66.461	(IN)
COMBUSTOR EXIT	66.461	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9890	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0968	
DELTA PT2	0.0883	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.2943	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1001	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8960	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9105	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9347	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8872	
ENTHALPY AT PO - SUPERSONIC	-21.69	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	17.09	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0291
EQUIVALENCE RATIO	0.925
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.0908
COMBUSTOR EFFECTIVENESS	0.1424
INJECTOR DISCHARGE COEFFICIENTS	0.8456, 0.7450,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	1.0153
NOZZLE COEFFICIENT - CT	0.9673
PROCESS EFFICIENCY	1.1337
KINETIC ENERGY EFFICIENCY	1.0304

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.706	
1C	44.300	
2A	50.181	D
2C	46.250	E
3A	55.471	
3B	57.656	
4	46.206	

Reading 89

t = 304.77 sec.

Injected fuel did not ignite.

2-13-75

READING = 0089 BLOCK = 130 TIME = 304.773 MACH 7.2 PT = 994.499 TT = 3287.2

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H		GAMMA	MOLWT	SONV	MACH	VEL	S	A/A	A	A/AC	HORIP	D	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6															
0.000	994.499	3287	758.3(	881)	1.2845	28.909	2695											
0.000	0.153	322	-51.7(	77)	1.3972	28.908	880	7.233	6366	1.836	0.05640	14.296	0.9896	2867	5.580	200.6		
SPIKE TIP M8		2	0 6															
0.600	11.387	3286	758.3(	880)	1.2834	28.907	2693											
0.600	10.555	3232	741.2(	864)	1.2853	28.907	2673	0.345	923	2.143	0.05640	14.296	0.9896	3065	0.809	215.8		
WIND TUNNEL		3	0 0															
0.000	994.499	3287	758.3(	881)	1.2845	28.909	2695											
0.000	0.173	334	-48.9(	80)	1.3975	28.908	896	7.093	6355	1.836	0.06153	15.598	0.9896	3125	6.077	200.3		
SPIKE TIP M8		4	0 0															
0.600	11.387	3286	758.3(	880)	1.2834	28.907	2693											
0.600	10.376	3219	737.4(	860)	1.2857	28.907	2668	0.383	1021	2.143	0.06153	15.598	0.9896	3125	0.976	200.3		
INLET THROAT		5	0 3															
40.400	303.370	3190	728.4(	852)	1.2874	28.909	2658											
40.400	10.595	1414	219.8(	349)	1.3533	28.908	1814	2.781	5045	1.908	0.70700	14.296	0.0789	2456	55.429	171.8		
INLET UPNRSK		6	0 3															
40.400	303.370	3190	728.4(	852)	1.2874	28.909	2658											
40.400	9.142	1361	205.7(	335)	1.3565	28.908	1782	2.870	5114	1.908	0.64273	14.296	0.0868	2476	51.082	173.2		
INLET DNNRSK		7	0 4															
40.400	99.771	3190	728.4(	852)	1.2873	28.908	2658											
40.400	86.870	3093	698.5(	823)	1.2903	28.908	2620	0.467	1223	1.985	0.64273	14.296	0.0868	2476	12.219	173.2		
COMBUSTOR	0	8	1 3															
40.410	303.052	3190	728.3(	852)	1.2874	28.909	2658											
40.410	10.599	1415	219.9(	349)	1.3533	28.908	1815	2.780	5044	1.908	0.70691	14.296	0.0790	2456	55.413	171.8		
COMBUSTOR	0	9	2 3															
40.729	294.306	3184	726.3(	850)	1.2876	28.909	2655											
40.729	10.813	1430	223.8(	353)	1.3524	28.908	1824	2.750	5015	1.910	0.70950	14.296	0.0787	2444	55.290	171.1		
COMBUSTOR	0	10	3 4															
41.219	266.552	3174	723.2(	847)	1.2879	28.909	2651											
41.219	11.266	1477	236.3(	365)	1.3497	28.908	1852	2.665	4936	1.916	0.70421	14.296	0.0793	2422	54.015	169.4		
COMBUSTOR	0	11	4 4															
41.500	243.454	3168	721.4(	845)	1.2881	28.909	2649											
41.500	11.662	1522	248.4(	377)	1.3471	28.908	1878	2.590	4865	1.921	0.69715	14.296	0.0801	2401	52.706	167.9		
COMBUSTOR	0	12	5 5															
42.460	195.199	3147	715.0(	839)	1.2887	28.909	2641											
42.460	12.065	1613	272.7(	402)	1.3424	28.908	1930	2.438	4704	1.935	0.65821	14.296	0.0848	2352	48.121	164.5		
COMBUSTOR	0	13	6 5															
42.714	188.077	3142	713.4(	837)	1.2888	28.909	2639											
42.714	12.061	1625	276.0(	405)	1.3418	28.908	1937	2.416	4678	1.937	0.64953	14.296	0.0859	2344	47.285	164.0		
COMBUSTOR	0	14	7 5															
42.779	186.473	3140	713.0(	837)	1.2889	28.909	2638											
42.779	12.073	1628	276.8(	406)	1.3416	28.908	1938	2.410	4672	1.937	0.64796	14.296	0.0861	2342	47.042	163.6		
COMBUSTOR	0	15	8 4															
44.310	151.695	3111	703.9(	828)	1.2898	28.908	2627											
44.310	11.971	1694	294.6(	424)	1.3384	28.908	1975	2.292	4526	1.948	0.59829	14.296	0.0933	2297	42.079	160.7		
COMBUSTOR	0	16	9 4															
44.800	143.497	3102	701.2(	826)	1.2901	28.908	2623											
44.800	12.154	1719	301.4(	430)	1.3373	28.908	1988	2.249	4473	1.951	0.59159	14.296	0.0943	2281	41.120	159.6		
COMBUSTOR	0	17	10 4															
45.499	135.112	3089	697.3(	822)	1.2904	28.908	2618											
45.499	12.469	1748	309.4(	438)	1.3360	28.908	2004	2.198	4405	1.954	0.58771	14.296	0.0950	2261	40.236	158.1		
COMBUSTOR	0	18	11 4															
46.214	128.438	3077	693.6(	818)	1.2908	28.908	2614											
46.214	12.262	1756	311.4(	440)	1.3357	28.908	2008	2.177	4373	1.956	0.57136	14.296	0.0977	2250	36.628	157.4		

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	G	TVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.250	81.904	2992	710.8(891)	1.2965	25.589	2745											
46.250	9.449	1777	318.0(502)	1.3387	25.589	2150	2.062	4433	2.168	0.57578	14.442	0.0979	2227	39.668	154.2	0.33	0.07
COMBUSTOR	0	20	13 21														
46.260	90.143	2891	710.7(860)	1.3012	25.485	2709											
46.260	9.444	1666	310.0(370)	1.3446	25.485	2090	2.121	4433	2.171	0.57552	14.442	0.0980	2227	39.648	154.2	0.33	0.01
COMBUSTOR	0	21	14 21														
46.939	87.062	2867	707.7(852)	1.3023	25.470	2699											
46.939	9.113	1650	310.1(465)	1.3456	25.470	2082	2.121	4415	2.171	0.54788	14.442	0.1029	2222	37.594	153.9	0.33	0.00
COMBUSTOR	0	22	15 21														
47.310	84.908	2860	706.2(850)	1.3025	25.468	2697											
47.310	8.851	1644	317.0(463)	1.3459	25.468	2078	2.124	4413	2.172	0.53348	14.442	0.1097	2220	36.586	153.8	0.33	0.00
COMBUSTOR	0	23	16 21														
48.110	79.518	2850	703.0(846)	1.3029	25.467	2692											
48.110	7.832	1614	308.0(454)	1.3473	25.467	2060	2.158	4446	2.176	0.49033	14.442	0.1150	2226	33.876	154.1	0.33	0.00
COMBUSTOR	0	24	17 21														
48.739	58.304	3120	700.5(931)	1.2898	25.753	2787											
48.739	7.075	1890	299.5(535)	1.3324	25.754	2205	2.032	4480	2.223	0.44647	14.442	0.1263	2240	31.083	155.1	0.33	0.17
COMBUSTOR	0	25	18 21														
50.179	53.488	2826	708.6(908)	1.3049	23.475	2794											
50.179	6.996	1715	324.1(526)	1.3445	23.475	2210	1.985	4386	2.354	0.36614	14.555	0.1552	2262	24.958	155.4	0.58	0.05
COMBUSTOR	0	26	19 21														
50.189	59.066	2720	708.5(872)	1.3098	23.378	2753											
50.189	6.996	1601	324.1(489)	1.3508	23.378	2145	2.045	4386	2.334	0.36566	14.555	0.1554	2263	24.924	155.5	0.58	0.01
COMBUSTOR	0	27	20 21														
50.719	59.405	2700	707.0(865)	1.3107	23.364	2744											
50.719	6.967	1584	324.0(484)	1.3518	23.364	2134	2.051	4378	2.331	0.34198	14.555	0.1662	2277	23.266	156.4	0.58	0.00
COMBUSTOR	0	28	21 21														
52.129	55.983	2687	703.2(861)	1.3112	23.361	2738											
52.129	5.287	1489	293.9(453)	1.3565	23.361	2073	2.183	4526	2.334	0.29146	14.555	0.1950	2311	20.500	158.8	0.58	0.00
COMBUSTOR	0	29	22 21														
54.229	39.641	2666	696.9(857)	1.3119	23.254	2735											
54.229	2.125	1269	222.8(384)	1.3681	23.254	1927	2.528	4871	2.370	0.23946	14.589	0.2379	2338	18.125	160.3	0.59	0.00
COMBUSTOR	0	30	23 21														
54.729	44.601	2658	695.9(854)	1.3122	23.250	2731											
54.729	2.829	1323	241.7(402)	1.3653	23.250	1965	2.426	4768	2.359	0.22967	14.589	0.2480	2341	17.018	160.5	0.59	0.00
COMBUSTOR	0	31	24 21														
55.479	42.494	2654	694.6(853)	1.3124	23.249	2729											
55.479	2.515	1296	233.5(393)	1.3667	23.249	1946	2.468	4803	2.362	0.21650	14.589	0.2631	2348	16.161	160.9	0.59	0.00
COMBUSTOR	0	32	25 21														
55.760	41.638	2652	694.1(852)	1.3125	23.249	2728											
55.760	2.398	1286	230.3(390)	1.3673	23.249	1939	2.484	4817	2.364	0.21198	14.589	0.2687	2350	15.870	161.0	0.59	0.00
COMBUSTOR	0	33	26 21														
56.239	35.258	2734	693.3(880)	1.3086	23.325	2762											
56.239	2.178	1358	223.5(412)	1.3626	23.326	1986	2.441	4848	2.388	0.16749	14.589	0.3401	2388	12.620	163.7	0.59	0.03
COMBUSTOR	0	34	27 21														
57.664	35.977	2657	691.2(854)	1.3121	23.260	2730											
57.664	1.642	1211	201.9(366)	1.3712	23.260	1884	2.627	4948	2.377	0.15481	14.589	0.3679	2398	11.904	164.4	0.59	0.00
COMBUSTOR	0	35	28 21														
57.719	36.287	2646	691.1(850)	1.3126	23.251	2725											
57.719	1.898	1232	212.4(373)	1.3702	23.251	1900	2.576	4894	2.370	0.15437	14.589	0.3690	2399	11.742	164.4	0.59	0.00
COMBUSTOR	0	36	29 21														
57.859	36.196	2644	690.9(849)	1.3127	23.249	2724											
57.859	1.870	1227	211.4(371)	1.3704	23.249	1896	2.583	4898	2.370	0.15326	14.589	0.3717	2399	11.667	164.4	0.59	0.00
COMBUSTOR	0	37	30 21														
57.939	36.161	2644	690.8(849)	1.3127	23.249	2724											
57.939	1.535	1160	196.5(356)	1.3730	23.249	1861	2.672	4973	2.375	0.15506	14.589	0.3673	2400	11.984	164.5	0.59	0.00

READING = 0089 BLOCK = 130 TIME = 304.773 MACH 7.2 PT = 994.499 TT = 3287.2

PAGE 1

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	F	IVAC	PHI	ETAC
COMBUSTOR	0	38	31 21														
58.219	35.261	2642	690.4(949)	1.3128	23.249	2724											
58.219	1.425	1164	191.5(351)	1.3738	23.249	1849	2.702	4997	2.377	0.15447	14.589	0.3686	2400	11.994	164.5	0.59	0.00
COMBUSTOR	0	39	32 21														
58.445	22.276	2935	690.2(948)	1.2990	23.519	2839											
58.445	1.419	1490	190.9(452)	1.3537	23.519	2069	2.421	4998	2.445	0.15426	14.589	0.3693	2401	11.982	164.6	0.59	0.11
COMBUSTOR	0	40	33 21														
59.169	32.342	2683	689.3(862)	1.3108	23.289	2740											
59.169	1.400	1207	189.9(365)	1.3711	23.289	1880	2.659	4999	2.389	0.15179	14.589	0.3753	2401	11.792	164.6	0.59	0.02
COMBUSTOR	0	41	34 21														
60.189	32.234	2643	688.3(849)	1.3126	23.255	2723											
60.189	1.200	1138	181.3(343)	1.3751	23.255	1829	2.753	5037	2.385	0.15082	14.589	0.3777	2400	11.805	164.5	0.59	0.00
COMBUSTOR	0	42	35 21														
62.199	38.826	2633	686.7(845)	1.3131	23.250	2719											
62.199	1.962	1231	212.6(373)	1.3702	23.250	1899	2.564	4871	2.367	0.15606	14.589	0.3650	2392	11.814	164.0	0.59	0.00
COMBUSTOR	0	43	36 21														
63.619	36.547	2629	685.7(844)	1.3132	23.249	2717											
63.619	1.612	1185	198.2(358)	1.3727	23.249	1865	2.648	4939	2.372	0.16030	14.589	0.3553	2386	12.304	163.6	0.59	0.00
COMBUSTOR	0	44	37 21														
66.083	38.310	2624	684.0(842)	1.3134	23.249	2715											
66.083	2.849	1361	254.1(414)	1.3633	23.249	1992	2.329	4638	2.367	0.15194	14.589	0.3749	2377	10.952	162.9	0.59	0.00
COMBUSTOR	0	45	38 21														
66.459	33.384	2662	683.7(855)	1.3116	23.284	2730											
66.459	2.399	1371	243.8(417)	1.3620	23.284	1997	2.349	4692	2.384	0.14126	14.589	0.4032	2375	10.299	162.8	0.59	0.01
COMBUSTOR	REGEN	46	39 3														
66.459	33.384	2771	723.0(894)	1.3080	23.284	2782											
66.459	3.122	1537	297.5(470)	1.3539	23.284	2108	2.189	4614	2.398	0.14126	14.589	0.4032	2415	10.129	165.5	0.59	0.01
NOZZLE AE		47	40 4														
88.695	33.384	2662	683.7(854)	1.3116	23.284	2730											
88.695	0.256	740	47.8(221)	1.3936	23.284	1484	3.801	5641	2.384	0.02940	14.589	1.9371	2685	2.578	184.0	0.59	0.01
NOZZLE PO		48	41 4														
88.695	33.384	2662	683.7(854)	1.3116	23.284	2730											
88.695	0.153	639	17.4(190)	1.3970	23.284	1381	4.181	5774	2.384	0.02078	14.589	2.7416	2726	1.864	186.0	0.59	0.01
NOZZLE AE REGEN		49	42 4														
88.695	33.384	2771	723.0(894)	1.3080	23.284	2782											
88.695	0.266	785	61.3(234)	1.3919	23.284	1527	3.767	5754	2.398	0.02940	14.589	1.9372	2741	2.629	187.9	0.59	0.01
NOZZLE PO REGEN		50	43 4														
88.695	33.384	2771	723.0(894)	1.3080	23.284	2782											
88.695	0.153	671	26.9(200)	1.3960	23.284	1414	4.174	5902	2.398	0.02024	14.589	2.8144	2766	1.856	191.0	0.59	0.01
FICTIVE COMBUSTR		68	61 0														
66.459	303.370	4995	683.7(1670)	1.1934	25.775	3391											
66.459	0.153	942	-828.3(262)	1.3636	25.985	1568	5.549	8698	2.334	0.02371	14.589	2.4024	4038	3.205	276.8	0.89	1.00
FICTIVE NOZZLE		69	62 0														
88.695	36.451	2639	675.6(847)	1.3123	23.284	2720											
88.695	0.243	704	37.0(210)	1.3949	23.284	1449	3.903	5653	2.373	0.02941	14.589	1.9371	2684	2.583	184.0	0.59	0.01

XABS	P-IR	P-OB	POA	QOX	Q-IR	Q-OB	CA-ALL	P-IR/PBO	P-IR/PTO	P-OB/PBO	P-OB/PTO
6.981E-01	5.900E-01	0.000	-2.750E-01	0.000	0.000	0.000	2.470E-02	4.520E 00	6.938E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.520E 00	6.938E-04	0.000	0.000
3.070E 01	1.140E 00	0.000	-9.714E 01	0.000	0.000	0.000	5.053E 02	7.467E 00	1.146E-03	0.000	0.000
3.508E 01	2.005E 00	0.000	-1.991E 02	0.000	0.000	0.000	6.804E 02	1.313E 01	2.016E-03	0.000	0.000
3.555E 01	2.155E 00	0.000	-2.180E 02	0.000	0.000	0.000	7.013E 02	1.412E 01	2.167E-03	0.000	0.000
3.606E 01	2.045E 00	0.000	-2.393E 02	-1.880E 02	-1.880E 02	0.000	7.246E 02	1.340E 01	2.056E-03	0.000	0.000
3.648E 01	2.282E 00	0.000	-2.578E 02	-1.926E 02	-1.926E 02	0.000	7.443E 02	1.495E 01	2.294E-03	0.000	0.000
3.660E 01	2.298E 00	3.246E 00	-2.970E 02	-1.939E 02	-1.939E 02	0.000	7.498E 02	1.505E 01	2.311E-03	2.128E 01	3.266E-03
3.660E 01	2.299E 00	3.266E 00	-2.970E 02	-1.940E 02	-1.940E 02	0.000	7.501E 02	1.506E 01	2.312E-03	2.140E 01	3.285E-03
3.701E 01	2.355E 00	4.494E 00	-2.985E 02	-1.986E 02	-1.986E 02	0.000	7.923E 02	1.543E 01	2.368E-03	2.944E 01	4.519E-03
3.727E 01	2.261E 00	5.275E 00	-2.974E 02	-2.016E 02	-2.016E 02	0.000	8.195E 02	1.481E 01	2.274E-03	3.455E 01	5.304E-03
3.803E 01	1.985E 00	8.296E 00	-2.794E 02	-2.111E 02	-2.111E 02	0.000	9.013E 02	1.300E 01	1.996E-03	5.436E 01	8.344E-03
3.873E 01	6.482E 00	1.107E 01	-2.778E 02	-2.874E 02	-2.217E 02	-6.975E 01	9.793E 02	4.246E 01	6.518E-03	7.254E 01	1.114E-02
3.875E 01	6.617E 00	1.102E 01	-2.780E 02	-2.891E 02	-2.220E 02	-6.703E 01	9.817E 02	4.335E 01	6.654E-03	7.217E 01	1.108E-02
3.901E 01	8.290E 00	1.032E 01	-2.831E 02	-3.046E 02	-2.268E 02	-8.282E 01	1.011E 03	5.430E 01	8.336E-03	6.757E 01	1.037E-02
3.950E 01	1.126E 01	8.991E 00	-3.007E 02	-3.495E 02	-2.370E 02	-1.125E 02	1.067E 03	7.379E 01	1.133E-02	5.890E 01	9.041E-03
3.975E 01	1.094E 01	8.319E 00	-3.095E 02	-3.705E 02	-2.429E 02	-1.275E 02	1.096E 03	7.167E 01	1.100E-02	5.449E 01	8.365E-03
4.000E 01	1.062E 01	8.042E 00	-3.162E 02	-3.921E 02	-2.494E 02	-1.426E 02	1.125E 03	6.954E 01	1.067E-02	5.268E 01	8.086E-03
4.022E 01	1.111E 01	7.800E 00	-3.220E 02	-4.113E 02	-2.555E 02	-1.558E 02	1.150E 03	7.276E 01	1.117E-02	5.109E 01	7.843E-03
4.040E 01	1.151E 01	8.658E 00	-3.263E 02	-4.273E 02	-2.606E 02	-1.667E 02	1.172E 03	7.543E 01	1.158E-02	5.802E 01	8.907E-03
4.041E 01	1.154E 01	8.917E 00	-3.264E 02	-4.282E 02	-2.609E 02	-1.673E 02	1.173E 03	7.557E 01	1.160E-02	5.841E 01	8.966E-03
4.073E 01	1.225E 01	1.078E 01	-3.311E 02	-4.568E 02	-2.704E 02	-1.864E 02	1.210E 03	8.027E 01	1.232E-02	7.062E 01	1.084E-02
4.122E 01	1.336E 01	1.962E 00	-3.479E 02	-5.015E 02	-2.862E 02	-2.153E 02	1.268E 03	8.746E 01	1.343E-02	1.285E 01	1.973E-03
4.150E 01	1.399E 01	2.025E 00	-3.646E 02	-5.275E 02	-2.960E 02	-2.318E 02	1.301E 03	9.162E 01	1.406E-02	1.326E 01	2.036E-03
4.246E 01	6.750E 00	2.238E 00	-3.986E 02	-6.100E 02	-3.317E 02	-2.863E 02	1.415E 03	4.421E 01	6.787E-03	1.466E 01	2.251E-03
4.271E 01	7.341E 00	2.295E 00	-4.031E 02	-6.415E 02	-3.414E 02	-3.001E 02	1.445E 03	4.809E 01	7.382E-03	1.503E 01	2.308E-03
4.278E 01	7.493E 00	2.309E 00	-4.042E 02	-6.473E 02	-3.439E 02	-3.034E 02	1.453E 03	4.908E 01	7.534E-03	1.513E 01	2.322E-03
4.431E 01	1.106E 01	5.551E 00	-4.281E 02	-7.766E 02	-3.983E 02	-3.783E 02	1.638E 03	7.244E 01	1.112E-02	3.636E 01	5.582E-03
4.480E 01	1.220E 01	6.589E 00	-4.374E 02	-8.161E 02	-4.144E 02	-4.017E 02	1.697E 03	7.991E 01	1.227E-02	4.316E 01	6.625E-03
4.550E 01	1.156E 01	8.069E 00	-4.484E 02	-8.716E 02	-4.364E 02	-4.352E 02	1.782E 03	7.574E 01	1.163E-02	5.285E 01	8.113E-03
4.621E 01	1.091E 01	8.022E 00	-4.499E 02	-9.245E 02	-4.581E 02	-4.654E 02	1.870E 03	7.147E 01	1.097E-02	5.255E 01	8.067E-03
4.625E 01	1.088E 01	8.020E 00	-4.497E 02	-9.270E 02	-4.592E 02	-4.678E 02	1.874E 03	7.126E 01	1.094E-02	5.253E 01	8.064E-03
4.626E 01	1.087E 01	8.019E 00	-4.497E 02	-9.277E 02	-4.595E 02	-4.682E 02	1.876E 03	7.120E 01	1.093E-02	5.253E 01	8.064E-03
4.694E 01	1.025E 01	7.975E 00	-4.443E 02	-9.710E 02	-4.793E 02	-4.916E 02	1.959E 03	6.714E 01	1.031E-02	5.224E 01	8.019E-03
4.731E 01	9.912E 00	7.789E 00	-4.410E 02	-9.928E 02	-4.899E 02	-5.029E 02	2.005E 03	6.493E 01	9.967E-03	5.102E 01	7.833E-03
4.811E 01	8.275E 00	7.389E 00	-4.254E 02	-1.039E 03	-5.120E 02	-5.271E 02	2.104E 03	5.420E 01	8.321E-03	4.840E 01	7.430E-03
4.874E 01	7.075E 00	7.075E 00	-4.047E 02	-1.075E 03	-5.287E 02	-5.461E 02	2.182E 03	4.634E 01	7.114E-03	4.634E 01	7.114E-03
5.018E 01	6.996E 00	6.996E 00	-3.524E 02	-1.148E 03	-5.648E 02	-5.834E 02	2.362E 03	4.583E 01	7.035E-03	4.583E 01	7.035E-03
5.019E 01	6.996E 00	6.996E 00	-3.521E 02	-1.149E 03	-5.650E 02	-5.836E 02	2.364E 03	4.582E 01	7.034E-03	4.582E 01	7.034E-03
5.072E 01	6.967E 00	6.967E 00	-3.328E 02	-1.172E 03	-5.775E 02	-5.941E 02	2.430E 03	4.563E 01	7.005E-03	4.563E 01	7.005E-03
5.213E 01	5.287E 00	5.287E 00	-2.875E 02	-1.226E 03	-6.088E 02	-6.170E 02	2.608E 03	3.463E 01	5.317E-03	3.463E 01	5.317E-03
5.423E 01	2.125E 00	2.125E 00	-2.467E 02	-1.294E 03	-6.501E 02	-6.439E 02	2.874E 03	1.392E 01	2.137E-03	1.392E 01	2.137E-03
5.473E 01	2.825E 00	2.825E 00	-2.403E 02	-1.308E 03	-6.590E 02	-6.493E 02	2.938E 03	1.850E 01	2.841E-03	1.850E 01	2.841E-03
5.548E 01	2.515E 00	2.515E 00	-2.299E 02	-1.329E 03	-6.717E 02	-6.568E 02	3.034E 03	1.647E 01	2.528E-03	1.647E 01	2.528E-03
5.576E 01	2.398E 00	2.398E 00	-2.264E 02	-1.336E 03	-6.763E 02	-6.595E 02	3.070E 03	1.571E 01	2.412E-03	1.571E 01	2.412E-03
5.624E 01	2.156E 00	2.200E 00	-1.865E 02	-1.347E 03	-6.836E 02	-6.638E 02	3.102E 03	1.412E 01	2.168E-03	1.441E 01	2.212E-03
5.766E 01	1.642E 00	1.642E 00	-1.729E 02	-1.378E 03	-7.025E 02	-6.755E 02	3.209E 03	1.076E 01	1.651E-03	1.076E 01	1.651E-03
5.772E 01	2.175E 00	1.621E 00	-1.724E 02	-1.379E 03	-7.032E 02	-6.759E 02	3.217E 03	1.425E 01	2.187E-03	1.062E 01	1.630E-03
5.786E 01	2.175E 00	1.566E 00	-1.714E 02	-1.382E 03	-7.049E 02	-6.769E 02	3.234E 03	1.425E 01	2.187E-03	1.026E 01	1.575E-03
5.794E 01	1.535E 00	1.535E 00	-1.707E 02	-1.383E 03	-7.058E 02	-6.775E 02	3.245E 03	1.005E 01	1.543E-03	1.005E 01	1.543E-03
5.822E 01	1.425E 00	1.425E 00	-1.688E 02	-1.389E 03	-7.091E 02	-6.795E 02	3.280E 03	9.334E 00	1.433E-03	9.334E 00	1.433E-03
5.844E 01	1.419E 00	1.419E 00	-1.674E 02	-1.393E 03	-7.116E 02	-6.811E 02	3.309E 03	9.295E 00	1.427E-03	9.295E 00	1.427E-03
5.917E 01	1.400E 00	1.400E 00	-1.636E 02	-1.405E 03	-7.191E 02	-6.861E 02	3.402E 03	9.170E 00	1.408E-03	9.170E 00	1.408E-03
6.019E 01	1.200E 00	1.200E 00	-1.606E 02	-1.420E 03	-7.284E 02	-6.918E 02	3.532E 03	7.860E 00	1.207E-03	7.860E 00	1.207E-03
6.220E 01	1.962E 00	1.962E 00	-1.602E 02	-1.443E 03	-7.424E 02	-7.006E 02	3.790E 03	1.285E 01	1.973E-03	1.285E 01	1.973E-03
6.362E 01	1.612E 00	1.612E 00	-1.602E 02	-1.457E 03	-7.495E 02	-7.077E 02	3.972E 03	1.056E 01	1.621E-03	1.056E 01	1.621E-03

C.3

XABS	P-IP	P-OR	PPA	COX	Q-IP	Q-OR	CSAVL	P-IP/PSO	P-IP/PTO	P-OR/PSO	P-OR/PTO
6.608E 01	2.849E 00	2.849E 00	-1.602E 02	-1.463E 03	-7.578E 02	-7.253E 02	4.209E 03	1.866E 01	2.864E-03	1.866E 01	2.864E-03
6.646E 01	1.760E 00	3.037E 00	-1.602E 02	-1.487E 03	-7.586E 02	-7.286E 02	4.337E 03	1.153E 01	1.770E-03	1.989E 01	3.054E-03
6.650E 01	1.760E 00	3.057E 00	-1.602E 02	-1.486E 03	-7.587E 02	-7.289E 02	4.342E 03	1.153E 01	1.770E-03	2.003E 01	3.074E-03
6.670E 01	1.845E 00	3.157E 00	-1.602E 02	-1.490E 03	-7.591E 02	-7.305E 02	4.368E 03	1.209E 01	1.856E-03	2.068E 01	3.175E-03
6.836E 01	2.555E 00	2.192E 00	-1.325E 02	-1.506E 03	-7.635E 02	-7.426E 02	4.584E 03	1.674E 01	2.569E-03	1.436E 01	2.204E-03
6.980E 01	1.190E 00	1.354E 00	-4.459E 01	-1.522E 03	-7.686E 02	-7.538E 02	4.761E 03	7.795E 00	1.197E-03	8.869E 00	1.361E-03
7.052E 01	1.063E 00	9.350E-01	-1.487E 01	-1.533E 03	-7.713E 02	-7.612E 02	4.849E 03	6.962E 00	1.069E-03	6.125E 00	9.402E-04
7.113E 01	9.550E-01	9.177E-01	6.466E 00	-1.541E 03	-7.737E 02	-7.670E 02	4.923E 03	6.256E 00	9.603E-04	6.011E 00	9.227E-04
7.251E 01	8.050E-01	8.785E-01	4.776E 01	-1.552E 03	-7.789E 02	-7.731E 02	5.089E 03	5.273E 00	8.095E-04	5.754E 00	8.833E-04
7.404E 01	6.183E-01	8.350E-01	8.498E 01	-1.564E 03	-7.839E 02	-7.803E 02	5.273E 03	4.050E 00	6.217E-04	5.470E 00	8.396E-04
7.419E 01	6.000E-01	7.758E-01	8.802E 01	-1.566E 03	-7.843E 02	-7.815E 02	5.291E 03	3.930E 00	6.033E-04	5.082E 00	7.801E-04
7.494E 01	5.964E-01	4.800E-01	1.090E 02	-1.575E 03	-7.862E 02	-7.889E 02	5.375E 03	3.907E 00	5.997E-04	3.144E 00	4.827E-04
7.494E 01	5.964E-01	4.784E-01	1.099E 02	-1.575E 03	-7.862E 02	-7.890E 02	5.375E 03	3.906E 00	5.997E-04	3.134E 00	4.811E-04
7.627E 01	5.900E-01	0.000	1.224E 02	-1.593E 03	-7.889E 02	-8.046E 02	5.427E 03	3.865E 00	5.933E-04	0.000	0.000
7.912E 01	3.150E-01	0.000	1.405E 02	-1.598E 03	-7.930E 02	-8.046E 02	5.525E 03	2.063E 00	3.167E-04	0.000	0.000
8.302E 01	3.000E-01	0.000	1.537E 02	-1.600E 03	-7.959E 02	-8.046E 02	5.630E 03	1.965E 00	3.017E-04	0.000	0.000
8.583E 01	2.650E-01	0.000	1.599E 02	-1.602E 03	-7.978E 02	-8.046E 02	5.689E 03	1.736E 00	2.665E-04	0.000	0.000
8.869E 01	3.850E-01	0.000	1.678E 02	-1.606E 03	-8.012E 02	-8.046E 02	5.707E 03	2.522E 00	3.871E-04	0.000	0.000
8.869E 01	3.853E-01	0.000	1.678E 02	-1.606E 03	-8.013E 02	-8.046E 02	5.707E 03	2.524E 00	3.874E-04	0.000	0.000

READING = 0089 BLOCK = 130 TIME = 304.773 MACH 7.2 PT = 994.499 TT = 3287.2

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.572E 01	8.572E 01	2.328E-03	3.444E-02
4.041E 01	1.514E-01	8.587E 01	2.328E-03	3.447E-02
4.073E 01	4.831E 00	9.070E 01	2.317E-03	3.493E-02
4.122E 01	7.469E 00	9.817E 01	2.398E-03	3.561E-02
4.150E 01	4.287E 00	1.025E 02	2.445E-03	3.612E-02
4.246E 01	1.435E 01	1.168E 02	2.543E-03	3.582E-02
4.271E 01	3.687E 00	1.205E 02	2.559E-03	3.560E-02
4.278E 01	9.393E-01	1.214E 02	2.563E-03	3.556E-02
4.431E 01	2.139E 01	1.428E 02	2.639E-03	3.406E-02
4.480E 01	6.570E 00	1.494E 02	2.667E-03	3.411E-02
4.550E 01	9.310E 00	1.587E 02	2.700E-03	3.440E-02
4.621E 01	9.373E 00	1.681E 02	2.715E-03	3.364E-02
4.625E 01	5.300E-01	1.686E 02	3.427E-03	2.551E-02
4.626E 01	1.675E-01	1.688E 02	3.427E-03	2.551E-02
4.694E 01	1.015E 01	1.789E 02	2.864E-03	2.865E-02
4.731E 01	4.872E 00	1.838E 02	2.851E-03	2.797E-02
4.811E 01	9.923E 00	1.937E 02	2.833E-03	2.519E-02
4.874E 01	7.160E 00	2.009E 02	2.801E-03	2.302E-02
5.018E 01	1.569E 01	2.166E 02	3.425E-03	1.918E-02
5.019E 01	1.070E-01	2.167E 02	3.425E-03	1.918E-02
5.072E 01	4.998E 00	2.217E 02	2.815E-03	2.232E-02
5.213E 01	1.077E 01	2.324E 02	2.730E-03	1.803E-02
5.423E 01	1.412E 01	2.466E 02	2.761E-03	8.928E-03
5.473E 01	3.042E 00	2.496E 02	2.674E-03	1.103E-02
5.548E 01	4.236E 00	2.538E 02	2.656E-03	1.003E-02
5.576E 01	1.529E 00	2.554E 02	2.652E-03	9.655E-03
5.624E 01	1.197E 00	2.566E 02	2.553E-03	8.602E-03
5.766E 01	3.426E 00	2.600E 02	2.638E-03	6.736E-03
5.772E 01	2.197E-01	2.602E 02	2.541E-03	7.647E-03
5.786E 01	5.272E-01	2.607E 02	2.527E-03	7.561E-03
5.794E 01	3.061E-01	2.610E 02	2.530E-03	6.559E-03
5.822E 01	1.082E 00	2.621E 02	2.528E-03	6.200E-03
5.844E 01	8.728E-01	2.630E 02	2.522E-03	6.173E-03
5.917E 01	2.968E 00	2.660E 02	2.868E-03	5.598E-03
6.019E 01	4.205E 00	2.702E 02	2.585E-03	5.320E-03
6.220E 01	7.740E 00	2.779E 02	2.498E-03	7.750E-03
6.362E 01	5.489E 00	2.834E 02	2.499E-03	6.721E-03
6.608E 01	9.272E 00	2.927E 02	2.546E-03	1.002E-02
6.646E 01	1.311E 00	2.940E 02	2.568E-03	8.801E-03
6.650E 01	1.280E-01	2.941E 02	2.590E-03	8.657E-03
6.670E 01	6.065E-01	2.947E 02	2.596E-03	8.886E-03
6.836E 01	5.071E 00	2.998E 02	2.575E-03	8.528E-03
6.980E 01	3.456E 00	3.032E 02	2.450E-03	5.435E-03
7.052E 01	1.312E 00	3.046E 02	2.403E-03	4.549E-03
7.113E 01	1.001E 00	3.056E 02	2.390E-03	4.335E-03
7.251E 01	2.130E 00	3.077E 02	2.366E-03	4.000E-03
7.404E 01	2.171E 00	3.099E 02	2.332E-03	3.577E-03
7.419E 01	1.898E-01	3.100E 02	2.322E-03	3.435E-03
7.494E 01	8.450E-01	3.109E 02	2.278E-03	2.662E-03
7.494E 01	1.489E-03	3.109E 02	2.277E-03	2.859E-03
7.627E 01	4.910E-01	3.114E 02	2.288E-03	3.055E-03
7.912E 01	7.872E-01	3.122E 02	2.173E-03	1.910E-03
8.302E 01	6.546E-01	3.128E 02	2.151E-03	1.828E-03
8.583E 01	3.190E-01	3.131E 02	2.121E-03	1.658E-03
8.869E 01	1.445E-01	3.133E 02	2.170E-03	2.176E-03
8.869E 01	0.000	3.133E 02	2.170E-03	2.178E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-184.	(LBF)
MEASURED THRUST	-191.	(LBF)
CALCULATED SPECIFIC IMPULSE	-690.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-717.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.1286	
MEASURED THRUST COEFFICIENT	-.1338	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	2740.	(LBF)
NET THRUST	-128.	(LBF)
SPECIFIC IMPULSE	-479.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.0893	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.7	(LBF)
INLET MOMENTUM CHANGE	-412.0	(LBF)
COMBUSTOR FRICTION DRAG	208.3	(LBF)
COMBUSTOR STRUT DRAG	1.89	(LBF)
COMBUSTOR MOMENTUM CHANGE	-81.	(LBF)
NOZZLE FRICTION DRAG	19.31	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	309.	(LBF)
NOZZLE PRESSURE INTEGRAL	328.	(LBF)
EXTERNAL FRICTION DRAG	50.27	(LBF)
EXTERNAL PRESSURE INTEGRAL	-662.	(LBF)
TOTAL EXTERNAL DRAG	-712.	(LBF)
TOTAL STRUT DRAG	1.89	(LBF)
CAVITY FORCE	-579.	(LBF)
CALCULATED LOAD CELL FORCE	-1476.	(LBF)
MEASURED LOAD CELL FORCE	-1483.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	-153.7, -123.7,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7190	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.603	(IN)
NOZZLE SHROUD TRAILING EDGE	74.943	(IN)
NOZZLE PLUG TRAILING EDGE	68.695	(IN)
STRUT LEADING EDGE	57.859	(IN)
STRUT TRAILING EDGE	66.459	(IN)
COMBUSTOR EXIT	66.459	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9896	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0990	
DELTA PT2	0.0878	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3050	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1003	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8998	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9116	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9295	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8812	
ENTHALPY AT PO - SUPERSONIC	-24.48	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	14.66	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0186
EQUIVALENCE RATIO	0.591
COMBUSTOR EFFICIENCY	0.014
TOTAL PRESSURE RATIO	0.1100
COMBUSTOR EFFECTIVENESS	0.1680
INJECTOR DISCHARGE COEFFICIENTS	1.0350, 0.7941,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9996
NOZZLE COEFFICIENT - CT	0.9569
PROCESS EFFICIENCY	1.0379
KINETIC ENERGY EFFICIENCY	0.9992

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.704	
1C	44.300	
2A	50.179	D
2C	46.250	E
3A	55.469	
3B	57.654	
4	46.204	

ORIGINAL PAGE IS
OF POOR QUALITY

Reading 89

t = 310.17 sec.

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READING = 0089  BLOCK = 136  TIME = 310.173  MACH  7.3  PT = 997.499  TT = 3057.1
                                                      RAMJET PERFORMANCE

                                                      S U M M A R Y   R E P O R T

              P       T      H            GAMMA  MOLWT SONV  MACH  VEL   S      ZA       [illegible]  A/AC   [illegible]  G   TVAC  PHI  ETAC
WIND TUNNEL           1      0   6
 0.000     997.499 3057   687.5( 812) 1.2914 28.909 2606
 0.000       0.155  295   -58.4(  71) 1.3963 28.908  841 7.261 6109 1.818 0.05993 15.198 0.9901   2925  4.690 192.5
SPIKE TIP MS          2      0   7
 0.600      11.300 3057   687.5( 812) 1.2911 28.908 2605
 0.600      10.413 3001   670.5( 796) 1.2929 28.908 2583 0.357  923 2.121 0.05993 15.198 0.9901   3077  0.861 202.4
WIND TUNNEL           3      0   0
 0.000     997.499 3057   687.5( 812) 1.2914 28.909 2606
 0.000       0.168  302   -56.6(  72) 1.3965 28.906  852 7.164 6192 1.814 0.06367 15.146 0.9901   3105  6.036 192.3
SPIKE TIP PS          4      0   0
 0.600      11.300 3057   687.5( 812) 1.2911 28.908 2605
 0.600      10.284 2993   667.9( 793) 1.2932 28.908 2580 0.384  990 2.121 0.06367 15.146 0.9901   3105  6.980 192.3
INLET THROAT          5      0   2
40.400     297.501 2990   667.2( 793) 1.2935 28.909 2579
40.400      11.080 1334   198.6( 328) 1.3581 28.908 1765 2.743 4842 1.890 0.75291 15.198 0.0789   2511 56.626 165.2
INLET UPNNSK          6      0   3
40.400     297.501 2990   667.2( 793) 1.2935 28.909 2579
40.400       9.549 1282   185.2( 314) 1.3613 28.908 1733 2.834 4911 1.890 0.68410 15.198 0.0867   2532 52.208 166.6
INLET DNNNSK          7      0   4
40.400     101.973 2990   667.2( 793) 1.2935 28.908 2579
40.400      88.537 2895   638.6( 765) 1.2965 28.908 2541 0.471 1196 1.964 0.68410 15.198 0.0867   2532 12.714 166.6
COMBUSTOR         0   8      1  21
40.410     222.823 2934   674.0( 832) 1.2971 28.685 2653
40.410      12.395 1444   221.6( 383) 1.3536 28.685 1901
                                                            2.502 4797 2.023 0.75686 15.288 0.0789   2511 55.952 164.2 0.19 0.07
COMBUSTOR         0   9      2   4
40.733     187.240 3053   672.2( 867) 1.2916 27.020 2694
40.733      16.060 1692   253.4( 453) 1.3395 27.020 2042 2.242 4578 2.045 0.75964 15.288 0.0786   2499 54.046 163.4 0.19 0.20
COMBUSTOR         0  10      3  21
41.223     200.361 2877   669.4( 814) 1.2996 26.639 2632
41.223      11.496 1422   229.3( 377) 1.3552 26.838 1890 2.484 4693 2.025 0.75388 15.288 0.0792   2463 54.982 161.1 0.19 0.03
COMBUSTOR         0  11      4  21
41.500     185.229 2847   667.8( 805) 1.3009 26.812 2621
41.500      12.671 1471   250.9( 391) 1.3528 26.812 1921 2.378 4567 2.028 0.74641 15.288 0.0800   2430 52.978 158.9 0.19 0.00
COMBUSTOR         0  12      5  21
42.460     126.779 2823   661.3( 798) 1.3018 26.808 2610
42.460      14.933 1676   311.1( 450) 1.3424 26.808 2043 2.049 4186 2.093 0.70391 15.288 0.0808   2313 45.791 151.5 0.19 0.00
COMBUSTOR         0  13      6  21
42.708     105.440 2785   662.9( 821) 1.3041 25.622 2655
42.708      16.028 1759   335.7( 496) 1.3400 25.622 2139 1.892 4047 2.139 0.69789 15.348 0.0659   2283 43.891 148.7 0.32 0.03
COMBUSTOR         0  14      7  21
42.718     108.784 2745   662.9( 809) 1.3059 25.582 2659
42.718      16.072 1718   336.3( 484) 1.3422 25.582 2117 1.909 4043 2.132 0.69822 15.348 0.0858   2282 43.865 148.7 0.32 0.00
COMBUSTOR         0  15      8  21
42.783     107.171 2737   662.4( 806) 1.3063 25.576 2636
42.783      16.360 1727   341.0( 487) 1.3419 25.576 2123 1.889 4010 2.132 0.69609 15.348 0.0861   2274 43.381 148.1 0.32 0.00
COMBUSTOR         0  16      9   4
44.310      71.911 2927   650.2( 965) 1.2969 25.807 2704
44.310      33.883 2455   494.6( 712) 1.3126 25.807 2492 1.120 2791 2.180 0.64311 15.348 0.0932   2140 27.689 139.4 0.32 0.15
COMBUSTOR         0  17     10   3
44.800      69.427 2858   646.3( 843) 1.3000 25.747 2678
44.800      39.506 2534   529.7( 728) 1.3117 25.747 2518 0.959 2415 2.176 0.63474 15.348 0.0944   2107 23.818 137.3 0.32 0.11
COMBUSTOR         0  18     11   3
45.503      68.551 2749   640.7( 809) 1.3048 25.653 2636
45.503      42.397 2453   543.9( 713) 1.3145 25.653 2500 0.880 2201 2.167 0.63135 15.348 0.0949   2080 21.591 135.5 0.32 0.05
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READING = 0089 BLOCK = 136 TIME = 319.173 MACH 7.3 PT = 997.499 TT = 3057.1

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	*	A/AC	HOPIM	C	TVAC	PHI	ETAC
COMBUSTOR	0	19	12 3														
46.218	66.422	2790	635.0(821)	1.3027	25.713	2651											
46.218	33.937	2380	501.0(689)	1.3163	25.713	2461	1.052	2589	2.173	0.61410	15.348	0.0976	2063	24.736	135.7	0.32	0.09
COMBUSTOR	0	20	13 21														
46.250	61.513	2640	652.1(855)	1.3117	23.086	2731											
46.250	33.558	2281	524.0(728)	1.3238	23.086	2550	0.993	2532	2.348	0.61838	15.498	0.0979	2061	24.333	133.0	0.63	0.04
COMBUSTOR	0	21	14 21														
46.260	63.056	2533	652.1(819)	1.3165	22.991	2685											
46.260	33.440	2170	523.4(691)	1.3289	22.991	2497	1.016	2538	2.333	0.61811	15.498	0.0979	2061	24.376	133.0	0.63	0.01
COMBUSTOR	0	22	15 21														
46.943	59.108	2501	646.3(808)	1.3178	22.977	2671											
46.943	25.360	2031	480.9(643)	1.3341	22.977	2422	1.188	2876	2.334	0.58831	15.498	0.1029	2054	26.299	132.5	0.63	0.00
COMBUSTOR	0	23	16 21														
47.310	56.453	2490	643.1(804)	1.3182	22.975	2665											
47.310	23.362	2004	472.2(634)	1.3351	22.975	2406	1.215	2924	2.336	0.57293	15.498	0.1086	2041	26.037	131.7	0.63	0.00
COMBUSTOR	0	24	17 21														
48.110	51.275	2470	636.3(797)	1.3189	22.975	2655											
48.110	20.658	1974	462.2(624)	1.3362	22.974	2389	1.235	2952	2.342	0.52656	15.498	0.1149	2030	24.155	131.0	0.63	0.00
COMBUSTOR	0	25	18 21														
48.743	26.078	2995	630.9(976)	1.2941	23.466	2866											
48.743	7.200	2212	346.8(698)	1.3212	23.467	2488	1.510	3757	2.453	0.47913	15.498	0.1243	2043	27.972	131.6	0.63	0.19
COMBUSTOR	0	26	19 21														
50.183	34.021	2495	634.1(864)	1.3187	21.406	2764											
50.183	10.891	1881	404.0(639)	1.3408	21.406	2420	1.402	3393	2.523	0.39288	15.618	0.1552	2080	20.715	133.2	0.88	0.04
COMBUSTOR	0	27	20 21														
50.193	36.506	2362	634.0(816)	1.3248	21.299	2703											
50.193	10.917	1743	404.3(587)	1.3477	21.299	2342	1.448	3390	2.499	0.39237	15.618	0.1554	2080	20.674	133.2	0.88	0.01
COMBUSTOR	0	28	21 21														
50.723	37.679	2336	631.4(806)	1.3260	21.283	2690											
50.723	12.275	1761	418.1(593)	1.3472	21.283	2354	1.388	3267	2.492	0.36696	15.618	0.1662	2108	18.631	135.0	0.88	0.00
COMBUSTOR	0	29	22 21														
52.133	36.289	2317	625.4(799)	1.3266	21.281	2680											
52.133	9.412	1646	377.7(552)	1.3521	21.281	2280	1.544	3520	2.493	0.31275	15.618	0.1950	2179	17.110	139.5	0.88	0.00
COMBUSTOR	0	30	23 21														
54.233	28.383	2286	614.1(790)	1.3278	21.202	2669											
54.233	3.625	1345	270.7(407)	1.3666	21.202	2076	1.997	4145	2.518	0.25691	15.653	0.2379	2238	16.550	143.0	0.89	0.00
COMBUSTOR	0	31	24 4														
54.733	30.667	2407	612.4(834)	1.3221	21.303	2725											
54.733	9.387	1787	381.0(603)	1.3449	21.303	2368	1.437	3403	2.527	0.24641	15.653	0.2480	2252	13.030	143.9	0.89	0.03
COMBUSTOR	0	32	25 21														
55.483	33.164	2289	609.9(791)	1.3275	21.214	2669											
55.483	6.836	1530	330.5(512)	1.3573	21.214	2206	1.695	3738	2.504	0.23228	15.653	0.2631	2279	13.495	145.6	0.89	0.01
COMBUSTOR	0	33	26 21														
55.760	33.452	2270	609.0(784)	1.3283	21.201	2659											
55.760	5.893	1455	310.0(486)	1.3611	21.200	2155	1.795	3868	2.500	0.22749	15.653	0.2686	2287	13.674	146.1	0.89	0.00
COMBUSTOR	0	34	27 21														
56.243	32.330	2264	607.5(782)	1.3286	21.199	2656											
56.243	4.262	1342	271.5(446)	1.3668	21.198	2074	1.977	4101	2.502	0.17970	15.653	0.3401	2366	11.452	151.2	0.89	0.00
COMBUSTOR	0	35	28 21														
57.668	29.641	2253	603.7(778)	1.3290	21.198	2650											
57.668	2.217	1145	203.4(378)	1.3766	21.198	1923	2.327	4475	2.509	0.16612	15.653	0.3679	2386	11.553	152.4	0.89	0.00
COMBUSTOR	0	36	29 5														
57.723	24.699	2526	603.6(877)	1.3163	21.419	2778											
57.723	5.319	1720	303.9(579)	1.3460	21.419	2321	1.669	3872	2.562	0.16562	15.653	0.3690	2387	9.966	152.5	0.89	0.07
COMBUSTOR	0	37	30 2														
57.863	24.716	2518	603.2(874)	1.3167	21.413	2774											
57.863	5.219	1709	301.4(573)	1.3467	21.413	2312	1.681	3886	2.561	0.16446	15.653	0.3716	2387	9.932	152.5	0.89	0.07

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                   P      T     H             GAMMA  MOLWT SONV MACH  VEL   S      F/A     W      A/AC    FORTH   Q      TVAC  PHI  ETAC
COMBUSTOR          0     34    31   21
57.943        26.105   2294   603.4( 793) 1.3270 21.232 2670
57.943         1.824   1148   188.3( 379) 1.3762 21.232 1923 2.369 4555 2.527 0.16630 15.653 0.3675   2388 11.773 152.6 0.89 0.01
COMBUSTOR          0     39    32   21
58.223        25.121   2256   602.4( 779) 1.3288 21.203 2651
58.223         1.425   1063   173.1( 350) 1.3824 21.203 1855 2.498 4635 2.525 0.16575 15.653 0.3687   2390 11.939 152.7 0.89 0.00
COMBUSTOR          0     40    33   21
58.449        25.446   2250   601.9( 777) 1.3291 21.199 2648
58.449         1.419   1054   172.1( 347) 1.3811 21.199 1848 2.510 4638 2.522 0.16547 15.653 0.3693   2391 11.926 152.7 0.89 0.00
COMBUSTOR          0     41    34   21
59.173        25.568   2248   600.6( 775) 1.3292 21.198 2646
59.173         1.400   1047   169.9( 345) 1.3814 21.198 1842 2.521 4602 2.521 0.16284 15.653 0.3753   2393 11.748 152.9 0.89 0.00
COMBUSTOR          0     42    35    5
60.193        22.224   2705   598.7( 943) 1.3079 21.579 2855
60.193         6.225   1986   325.5( 671) 1.3334 21.579 2470 1.497 3697 2.591 0.16181 15.653 0.3777   2401  9.295 153.4 0.89 0.12
COMBUSTOR          0     43    36    4
62.203        22.304   2766   594.3( 965) 1.3049 21.640 2880
62.203         6.937   2089   335.4( 708) 1.3287 21.640 2525 1.426 3599 2.596 0.16744 15.653 0.3690   2400  9.366 153.3 0.89 0.14
COMBUSTOR          0     44    37    4
63.623        22.245   2830   591.2( 988) 1.3018 21.701 2905
63.623         7.744   2200   349.2( 749) 1.3237 21.701 2583 1.347 3480 2.602 0.17198 15.653 0.3553   2398  9.300 153.2 0.89 0.16
COMBUSTOR          0     45    38    3
66.087        20.942   2837   585.1( 991) 1.3012 21.720 2907
66.087         7.465   2219   347.5( 755) 1.3227 21.721 2592 1.330 3448 2.608 0.16301 15.653 0.3749   2394  8.735 153.0 0.89 0.17
COMBUSTOR          0     46    39    5
66.463        23.553   2495   584.2( 865) 1.3172 21.434 2761
66.463         4.591   1658   273.0( 555) 1.3467 21.434 2277 1.733 3946 2.561 0.15155 15.653 0.4032   2394  9.293 152.9 0.89 0.08
COMBUSTOR  REGEN     47    40    3
66.463        23.553   2632   637.4( 918) 1.3125 21.434 2831
66.463         4.878   1784   318.3( 600) 1.3443 21.434 2358 1.695 3996 2.581 0.15155 15.653 0.4032   2448  9.410 156.4 0.89 0.08
NOZZLE  AE           48    41    4
88.699        23.553   2495   584.2( 864) 1.3172 21.434 2761
88.699         0.340    819   -15.5( 266) 1.3894 21.434 1625 3.371 5478 2.561 0.03155 15.653 1.9372   2834  2.685 181.0 0.89 0.08
NOZZLE  PO           49    42    4
88.699        23.553   2495   584.2( 864) 1.3172 21.434 2761
88.699         0.155    656   -69.2( 212) 1.3952 21.434 1457 3.924 5718 2.561 0.01869 15.653 3.2702   2911  1.661 186.0 0.89 0.08
NOZZLE  AE REGEN     50    43    4
88.699        23.553   2632   637.4( 918) 1.3125 21.434 2831
88.699         0.358    885     6.3( 288) 1.3866 21.434 1687 3.331 5620 2.581 0.03155 15.653 1.9372   2912  2.755 186.0 0.89 0.08
NOZZLE  PO REGEN     51    44    4
88.699        23.553   2632   637.4( 918) 1.3125 21.434 2831
88.699         0.155    699   -55.2( 227) 1.3938 21.434 1503 3.916 5887 2.581 0.01806 15.653 3.3841   2998  1.692 191.5 0.89 0.08
FICTIVE COMBUSTR     69    62    0
66.463       297.501   5333   584.2(1988) 1.1675 24.256 3572
66.463         0.155   1156-1219.7( 346) 1.3430 24.747 1766 5.379 9501 2.499 0.02034 15.653 3.0039   4741  3.004 302.9 0.89 1.00
FICTIVE NOZZLE       70    63    0
88.699        64.806   2461   571.3( 852) 1.3183 21.434 2743
88.699         0.204    524  -112.4( 169) 1.3986 21.434 1304 4.487 5849 2.462 0.03155 15.653 1.9371   2947  2.868 188.3 0.89 0.08
```

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CA-ALT	P-TH/P80	P-IB/PT0	P-OB/P80	P-OB/PT0
6.231E-01	6.900E-01	0.000	-2.729E-01	0.000	0.000	0.000	2.270E-02	9.463E 00	6.917E-04	0.000	0.000
1.036E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.551E 02	4.463E 00	6.917E-04	0.000	0.000
3.070E 01	1.135E 00	0.000	-9.694E 01	0.000	0.000	0.000	5.053E 02	7.342E 00	1.138E-03	0.000	0.000
3.508E 01	1.992E 00	0.000	-1.983E 02	0.000	0.000	0.000	6.908E 02	1.289E 01	1.997E-03	0.000	0.000
3.555E 01	2.155E 00	0.000	-2.172E 02	0.000	0.000	0.000	7.013E 02	1.394E 01	2.160E-03	0.000	0.000
3.606E 01	2.050E 00	0.000	-2.385E 02	-1.203E 02	-1.203E 02	0.000	7.246E 02	1.326E 01	2.055E-03	0.000	0.000
3.648E 01	2.279E 00	0.000	-2.571E 02	-1.232E 02	-1.232E 02	0.000	7.243E 02	1.474E 01	2.285E-03	0.000	0.000
3.660E 01	2.298E 00	3.200E 00	-2.959E 02	-1.240E 02	-1.240E 02	0.000	7.500E 02	1.486E 01	2.304E-03	2.070E 01	3.208E-03
3.661E 01	2.299E 00	3.219E 00	-2.959E 02	-1.241E 02	-1.241E 02	0.000	7.503E 02	1.487E 01	2.304E-03	2.082E 01	3.227E-03
3.701E 01	2.360E 00	4.463E 00	-2.974E 02	-1.270E 02	-1.270E 02	0.000	7.921E 02	1.527E 01	2.366E-03	2.887E 01	4.474E-03
3.727E 01	2.265E 00	5.275E 00	-2.966E 02	-1.290E 02	-1.290E 02	0.000	8.197E 02	1.465E 01	2.270E-03	3.412E 01	5.288E-03
3.803E 01	1.990E 00	8.273E 00	-2.788E 02	-1.351E 02	-1.351E 02	0.000	9.009E 02	1.287E 01	1.995E-03	5.351E 01	8.293E-03
3.873E 01	6.509E 00	1.106E 01	-2.773E 02	-1.883E 02	-1.443E 02	-4.395E 01	9.795E 02	4.211E 01	6.525E-03	7.152E 01	1.108E-02
3.875E 01	6.619E 00	1.101E 01	-2.775E 02	-1.893E 02	-1.446E 02	-4.468E 01	9.814E 02	4.281E 01	6.635E-03	7.123E 01	1.104E-02
3.901E 01	8.290E 00	1.032E 01	-2.825E 02	-2.051E 02	-1.499E 02	-5.525E 01	1.011E 03	5.363E 01	8.311E-03	6.673E 01	1.034E-02
3.950E 01	1.129E 01	9.007E 00	-3.002E 02	-2.381E 02	-1.630E 02	-7.509E 01	1.067E 03	7.307E 01	1.132E-02	5.826E 01	9.030E-03
3.975E 01	1.110E 01	8.331E 00	-3.095E 02	-2.568E 02	-1.715E 02	-8.529E 01	1.096E 03	7.180E 01	1.113E-02	5.389E 01	8.352E-03
4.000E 01	1.091E 01	8.045E 00	-3.162E 02	-2.763E 02	-1.810E 02	-9.524E 01	1.125E 03	7.057E 01	1.094E-02	5.204E 01	8.066E-03
4.022E 01	1.276E 01	7.787E 00	-3.234E 02	-2.946E 02	-1.904E 02	-1.042E 02	1.151E 03	8.252E 01	1.279E-02	5.038E 01	7.807E-03
4.040E 01	1.422E 01	1.034E 01	-3.295E 02	-3.094E 02	-1.981E 02	-1.113E 02	1.171E 03	9.201E 01	1.426E-02	6.688E 01	1.037E-02
4.041E 01	1.431E 01	1.048E 01	-3.297E 02	-3.103E 02	-1.986E 02	-1.117E 02	1.172E 03	9.255E 01	1.434E-02	6.781E 01	1.051E-02
4.073E 01	1.698E 01	1.514E 01	-3.363E 02	-3.378E 02	-2.132E 02	-1.246E 02	1.210E 03	1.099E 02	1.702E-02	9.792E 01	1.518E-02
4.122E 01	2.104E 01	1.950E 00	-3.638E 02	-3.808E 02	-2.370E 02	-1.439E 02	1.268E 03	1.361E 02	2.109E-02	1.261E 01	1.955E-03
4.150E 01	2.334E 01	2.004E 00	-3.926E 02	-4.058E 02	-2.513E 02	-1.545E 02	1.301E 03	1.510E 02	2.340E-02	1.296E 01	2.009E-03
4.246E 01	2.767E 01	2.190E 00	-4.941E 02	-5.055E 02	-3.027E 02	-2.028E 02	1.415E 03	1.790E 02	2.774E-02	1.417E 01	2.196E-03
4.271E 01	2.982E 01	2.239E 00	-5.207E 02	-5.347E 02	-3.159E 02	-2.188E 02	1.444E 03	1.929E 02	2.989E-02	1.448E 01	2.244E-03
4.272E 01	2.990E 01	2.240E 00	-5.217E 02	-5.359E 02	-3.164E 02	-2.194E 02	1.445E 03	1.934E 02	2.998E-02	1.449E 01	2.246E-03
4.278E 01	3.047E 01	2.253E 00	-5.289E 02	-5.436E 02	-3.198E 02	-2.238E 02	1.453E 03	1.971E 02	3.054E-02	1.458E 01	2.259E-03
4.431E 01	4.366E 01	2.410E 01	-6.434E 02	-7.304E 02	-3.896E 02	-3.408E 02	1.637E 03	2.825E 02	4.377E-02	1.559E 02	2.416E-02
4.480E 01	4.790E 01	3.111E 01	-6.711E 02	-7.907E 02	-4.082E 02	-3.825E 02	1.697E 03	3.099E 02	4.802E-02	2.013E 02	3.119E-02
4.550E 01	4.363E 01	4.117E 01	-6.913E 02	-8.757E 02	-4.331E 02	-4.426E 02	1.783E 03	2.822E 02	4.373E-02	2.663E 02	4.127E-02
4.622E 01	3.928E 01	2.860E 01	-6.820E 02	-9.641E 02	-4.574E 02	-5.066E 02	1.870E 03	2.541E 02	3.938E-02	1.850E 02	2.867E-02
4.625E 01	3.908E 01	2.803E 01	-6.809E 02	-9.681E 02	-4.585E 02	-5.096E 02	1.874E 03	2.528E 02	3.918E-02	1.813E 02	2.810E-02
4.626E 01	3.902E 01	2.786E 01	-6.807E 02	-9.694E 02	-4.588E 02	-5.106E 02	1.875E 03	2.524E 02	3.912E-02	1.802E 02	2.793E-02
4.694E 01	3.487E 01	1.585E 01	-6.811E 02	-1.059E 03	-4.913E 02	-5.773E 02	1.959E 03	2.256E 02	3.496E-02	1.025E 02	1.589E-02
4.731E 01	3.264E 01	1.409E 01	-6.904E 02	-1.108E 03	-4.930E 02	-6.146E 02	2.005E 03	2.111E 02	3.272E-02	9.112E 01	1.412E-02
4.811E 01	3.107E 01	1.024E 01	-6.933E 02	-1.214E 03	-5.178E 02	-6.962E 02	2.104E 03	2.010E 02	3.115E-02	6.625E 01	1.027E-02
4.874E 01	7.200E 00	7.200E 00	-6.742E 02	-1.298E 03	-5.367E 02	-7.611E 02	2.183E 03	4.658E 01	7.218E-03	4.658E 01	7.218E-03
5.018E 01	1.089E 01	1.089E 01	-6.071E 02	-1.455E 03	-5.771E 02	-8.775E 02	2.363E 03	7.045E 01	1.092E-02	7.045E 01	1.092E-02
5.019E 01	1.092E 01	1.092E 01	-6.065E 02	-1.456E 03	-5.774E 02	-8.781E 02	2.364E 03	7.062E 01	1.094E-02	7.062E 01	1.094E-02
5.072E 01	1.227E 01	1.227E 01	-5.745E 02	-1.497E 03	-5.914E 02	-9.051E 02	2.430E 03	7.940E 01	1.231E-02	7.940E 01	1.231E-02
5.213E 01	9.412E 00	9.412E 00	-4.943E 02	-1.590E 03	-6.265E 02	-9.631E 02	2.608E 03	6.089E 01	9.436E-03	6.089E 01	9.436E-03
5.423E 01	3.625E 00	3.625E 00	-4.225E 02	-1.713E 03	-6.727E 02	-1.040E 03	2.874E 03	2.345E 01	3.634E-03	2.345E 01	3.634E-03
5.473E 01	9.387E 00	9.387E 00	-4.056E 02	-1.740E 03	-6.826E 02	-1.058E 03	2.938E 03	6.073E 01	9.411E-03	6.073E 01	9.411E-03
5.548E 01	6.836E 00	6.836E 00	-3.742E 02	-1.779E 03	-6.968E 02	-1.082E 03	3.034E 03	4.422E 01	6.853E-03	4.422E 01	6.853E-03
5.576E 01	5.893E 00	5.893E 00	-3.652E 02	-1.793E 03	-7.018E 02	-1.091E 03	3.069E 03	3.812E 01	5.908E-03	3.812E 01	5.908E-03
5.624E 01	4.275E 00	4.250E 00	-2.848E 02	-1.815E 03	-7.103E 02	-1.105E 03	3.102E 03	2.765E 01	4.286E-03	2.749E 01	4.261E-03
5.767E 01	2.217E 00	2.217E 00	-2.618E 02	-1.876E 03	-7.334E 02	-1.142E 03	3.209E 03	1.434E 01	2.222E-03	1.434E 01	2.222E-03
5.772E 01	8.500E 00	2.138E 00	-2.612E 02	-1.876E 03	-7.343E 02	-1.144E 03	3.217E 03	5.498E 01	8.521E-03	1.383E 01	2.144E-03
5.786E 01	8.500E 00	1.939E 00	-2.599E 02	-1.883E 03	-7.363E 02	-1.147E 03	3.234E 03	5.498E 01	8.521E-03	1.254E 01	1.943E-03
5.794E 01	1.824E 00	1.824E 00	-2.591E 02	-1.886E 03	-7.375E 02	-1.149E 03	3.245E 03	1.180E 01	1.829E-03	1.180E 01	1.829E-03
5.822E 01	1.425E 00	1.425E 00	-2.570E 02	-1.896E 03	-7.415E 02	-1.154E 03	3.280E 03	9.218E 00	1.429E-03	9.218E 00	1.429E-03
5.845E 01	1.419E 00	1.419E 00	-2.556E 02	-1.903E 03	-7.447E 02	-1.158E 03	3.309E 03	9.180E 00	1.423E-03	9.180E 00	1.423E-03
5.917E 01	1.400E 00	1.400E 00	-2.518E 02	-1.924E 03	-7.541E 02	-1.170E 03	3.402E 03	9.056E 00	1.404E-03	9.056E 00	1.404E-03
6.019E 01	6.225E 00	6.225E 00	-2.430E 02	-1.955E 03	-7.660E 02	-1.185E 03	3.532E 03	4.027E 01	6.241E-03	4.027E 01	6.241E-03
6.220E 01	6.937E 00	6.937E 00	-2.414E 02	-2.023E 03	-7.853E 02	-1.237E 03	3.790E 03	4.488E 01	6.955E-03	4.488E 01	6.955E-03

YABS	P-IR	P-OR	UPX	COX	-IR	C-OR	CCALI	P-IR/PSO	P-IR/PTO	P-OR/PSO	P-OR/PTO
6.362E 01	7.744E 00	7.748E 00	-2.014E 02	-2.172E 03	-7.979E 02	-1.275E 03	3.972E 03	5.009E 01	7.763E-03	5.009E 01	7.763E-03
6.609E 01	7.465E 00	7.465E 00	-2.015E 02	-2.167E 03	-8.190E 02	-1.340E 03	[illegible]	4.829E 01	7.483E-03	4.829E 01	7.483E-03
6.646E 01	1.760E 00	7.422E 00	-2.014E 02	-2.182E 03	-8.223E 02	-1.360E 03	4.337E 03	1.139E 01	1.766E-03	4.813E 01	7.441E-03
6.650E 01	1.760E 00	7.418E 00	-2.014E 02	-2.184E 03	-8.227E 02	-1.361E 03	4.342E 03	1.139E 01	1.760E-03	4.798E 01	7.436E-03
6.670E 01	2.198E 00	7.395E 00	-2.414E 02	-2.192E 03	-8.245E 02	-1.367E 03	4.368E 03	1.422E 01	2.204E-03	4.784E 01	7.414E-03
6.836E 01	5.835E 00	5.296E 00	-1.808E 02	-2.246E 03	-8.373E 02	-1.409E 03	4.584E 03	3.775E 01	5.850E-03	3.426E 01	5.309E-03
6.980E 01	2.180E 00	3.475E 00	2.024E 01	-2.279E 03	-8.460E 02	-1.433E 03	4.761E 03	1.410E 01	2.185E-03	2.248E 01	3.484E-03
7.052E 01	1.668E 00	2.565E 00	8.251E 01	-2.294E 03	-8.495E 02	-1.444E 03	4.849E 03	1.079E 01	1.673E-03	1.659E 01	2.571E-03
7.113E 01	1.235E 00	2.268E 00	1.246E 02	-2.304E 03	-8.521E 02	-1.452E 03	4.923E 03	7.989E 00	1.238E-03	1.467E 01	2.273E-03
7.251E 01	8.400E-01	1.595E 00	1.899E 02	-2.322E 03	-8.569E 02	-1.465E 03	5.089E 03	5.434E 00	8.421E-04	1.032E 01	1.599E-03
7.404E 01	6.260E-01	8.500E-01	2.352E 02	-2.337E 03	-8.609E 02	-1.476E 03	5.273E 03	4.049E 00	6.275E-04	5.498E 00	8.521E-04
7.419E 01	6.050E-01	7.883E-01	2.393E 02	-2.339E 03	-8.613E 02	-1.478E 03	5.291E 03	3.914E 00	6.065E-04	5.100E 00	7.903E-04
7.494E 01	6.014E-01	4.800E-01	2.594E 02	-2.349E 03	-8.628E 02	-1.486E 03	5.375E 03	3.890E 00	6.029E-04	3.105E 00	4.812E-04
7.495E 01	6.014E-01	4.783E-01	2.604E 02	-2.349E 03	-8.628E 02	-1.486E 03	5.375E 03	3.890E 00	6.029E-04	3.094E 00	4.795E-04
7.627E 01	5.950E-01	0.000	2.730E 02	-2.368E 03	-8.652E 02	-1.503E 03	5.427E 03	3.849E 00	5.965E-04	0.000	0.000
7.912E 01	5.350E-01	0.000	2.956E 02	-2.371E 03	-8.690E 02	-1.503E 03	5.525E 03	3.461E 00	5.363E-04	0.000	0.000
8.302E 01	4.000E-01	0.000	3.156E 02	-2.375E 03	-8.721E 02	-1.503E 03	5.630E 03	2.588E 00	4.010E-04	0.000	0.000
8.583E 01	3.500E-01	0.000	3.239E 02	-2.377E 03	-8.746E 02	-1.503E 03	5.685E 03	2.264E 00	3.509E-04	0.000	0.000
8.869E 01	4.900E-01	0.000	3.340E 02	-2.382E 03	-8.794E 02	-1.503E 03	5.707E 03	3.170E 00	4.912E-04	0.000	0.000
8.870E 01	4.903E-01	0.000	3.340E 02	-2.382E 03	-8.794E 02	-1.503E 03	5.707E 03	3.172E 00	4.915E-04	0.000	0.000

READING = 0089 BLOCK = 136 TIME = 310.173 MACH 7.3 DT = 997.499 TI = 3057.1

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.492E 01	8.492E 01	2.278E-03	3.567E-02
4.061E 01	1.681E-01	8.509E 01	2.811E-03	3.664E-02
4.073E 01	5.510E 00	9.060E 01	2.489E-03	4.116E-02
4.122E 01	8.051E 00	9.865E 01	2.638E-03	3.618E-02
4.150E 01	4.569E 00	1.032E 02	2.537E-03	3.957E-02
4.246E 01	1.479E 01	1.180E 02	2.715E-03	4.157E-02
4.271E 01	3.815E 00	1.218E 02	3.022E-03	4.111E-02
4.272E 01	1.502E-01	1.220E 02	2.823E-03	4.356E-02
4.278E 01	9.564E-01	1.229E 02	2.803E-03	4.427E-02
4.431E 01	1.939E 01	1.423E 02	3.109E-03	5.715E-02
4.480E 01	4.946E 00	1.473E 02	3.319E-03	5.460E-02
4.550E 01	6.089E 00	1.538E 02	3.344E-03	5.411E-02
4.622E 01	6.642E 00	1.604E 02	3.208E-03	5.266E-02
4.625E 01	3.276E-01	1.607E 02	3.602E-03	4.757E-02
4.626E 01	1.035E-01	1.608E 02	3.271E-03	5.362E-02
4.694E 01	6.845E 00	1.677E 02	3.152E-03	4.861E-02
4.731E 01	3.740E 00	1.714E 02	3.142E-03	4.638E-02
4.811E 01	7.809E 00	1.792E 02	3.137E-03	4.196E-02
4.874E 01	6.440E 00	1.857E 02	3.138E-03	2.199E-02
5.018E 01	1.498E 01	2.006E 02	3.701E-03	2.300E-02
5.019E 01	8.929E-02	2.007E 02	3.188E-03	2.720E-02
5.072E 01	4.088E 00	2.048E 02	3.070E-03	2.960E-02
5.213E 01	9.556E 00	2.144E 02	2.953E-03	2.512E-02
5.423E 01	1.310E 01	2.275E 02	2.893E-03	1.315E-02
5.473E 01	2.728E 00	2.302E 02	2.895E-03	2.358E-02
5.548E 01	3.690E 00	2.339E 02	2.912E-03	1.910E-02
5.576E 01	1.374E 00	2.353E 02	2.791E-03	1.798E-02
5.624E 01	1.111E 00	2.364E 02	2.638E-03	1.409E-02
5.767E 01	3.223E 00	2.396E 02	2.567E-03	9.026E-03
5.772E 01	1.983E-01	2.398E 02	2.604E-03	1.560E-02
5.786E 01	4.908E-01	2.403E 02	2.888E-03	1.449E-02
5.794E 01	3.224E-01	2.406E 02	2.916E-03	7.165E-03
5.822E 01	1.177E 00	2.418E 02	2.650E-03	6.454E-03
5.845E 01	9.017E-01	2.427E 02	2.592E-03	6.518E-03
5.917E 01	2.830E 00	2.455E 02	2.570E-03	6.447E-03
6.019E 01	3.604E 00	2.491E 02	2.671E-03	1.701E-02
6.220E 01	6.825E 00	2.559E 02	3.002E-03	1.619E-02
6.362E 01	5.145E 00	2.611E 02	3.049E-03	1.695E-02
6.609E 01	8.778E 00	2.699E 02	3.109E-03	1.610E-02
6.646E 01	1.350E 00	2.712E 02	3.099E-03	1.216E-02
6.650E 01	1.416E-01	2.714E 02	2.836E-03	1.309E-02
6.670E 01	6.811E-01	2.720E 02	2.845E-03	1.344E-02
6.836E 01	5.887E 00	2.779E 02	2.874E-03	1.462E-02
6.980E 01	4.379E 00	2.823E 02	2.732E-03	9.597E-03
7.052E 01	1.786E 00	2.841E 02	2.675E-03	7.897E-03
7.113E 01	1.334E 00	2.854E 02	2.639E-03	6.931E-03
7.251E 01	2.587E 00	2.880E 02	2.570E-03	5.369E-03
7.404E 01	2.238E 00	2.903E 02	2.475E-03	3.746E-03
7.419E 01	1.753E-01	2.904E 02	2.464E-03	3.593E-03
7.494E 01	7.807E-01	2.912E 02	2.416E-03	2.960E-03
7.495E 01	1.376E-03	2.912E 02	2.418E-03	2.965E-03
7.627E 01	4.539E-01	2.917E 02	2.428E-03	3.194E-03
7.912E 01	8.537E-01	2.925E 02	2.396E-03	2.941E-03
8.302E 01	8.007E-01	2.933E 02	2.335E-03	2.363E-03
8.583E 01	3.595E-01	2.937E 02	2.311E-03	2.133E-03
8.869E 01	1.595E-01	2.936E 02	2.346E-03	2.716E-03

READING = 0089 BLOCK = 136 TIME = 310.173 MACH 7.3 PT = 997.499 TT = 3657.1

X	DDRAG	CDRAG	CF	HC
8.870E 01	0.000	2.938E 02	2.345E-03	2.711E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	21.	(LBF)
MEASURED THRUST	928.	(LBF)
CALCULATED SPECIFIC IMPULSE	50.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2175.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.0145	
MEASURED THRUST COEFFICIENT	0.6371	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	3928.	(LBF)
NET THRUST	102.	(LBF)
SPECIFIC IMPULSE	239.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.0701	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.9	(LBF)
INLET MOMENTUM CHANGE	-414.4	(LBF)
COMBUSTOR FRICTION DRAG	186.3	(LBF)
COMBUSTOR STRUT DRAG	-18.90	(LBF)
COMBUSTOR MOMENTUM CHANGE	-117.	(LBF)
NOZZLE FRICTION DRAG	22.62	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	553.	(LBF)
NOZZLE PRESSURE INTEGRAL	575.	(LBF)
EXTERNAL FRICTION DRAG	73.31	(LBF)
EXTERNAL PRESSURE INTEGRAL	-685.	(LBF)
TOTAL EXTERNAL DRAG	-758.	(LBF)
TOTAL STRUT DRAG	-18.90	(LBF)
CAVITY FORCE	-550.	(LBF)
CALCULATED LOAD CELL FORCE	-1287.	(LBF)
MEASURED LOAD CELL FORCE	-380.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, -153.8, -124.3,

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9901	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1009	
DELTA PT2	0.0914	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.2962	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1022	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8969	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9120	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9372	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8905	
ENTHALPY AT P0 - SUPERSONIC	-31.87	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	2.95	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0280
EQUIVALENCE RATIO	0.891
COMBUSTOR EFFICIENCY	0.077
TOTAL PRESSURE RATIO	0.0792
COMBUSTOR EFFECTIVENESS	0.1778
INJECTOR DISCHARGE COEFFICIENTS	0.9752, 0.4606, 1.0405, 0.8161

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	1.0399
NOZZLE COEFFICIENT - CT	0.9858
PROCESS EFFICIENCY	1.1866
KINETIC ENERGY EFFICIENCY	1.0751

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7230	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.607	(IN)
NOZZLE SHROUD TRAILING EDGE	74.947	(IN)
NOZZLE PLUG TRAILING EDGE	88.699	(IN)
STRUT LEADING EDGE	57.863	(IN)
STRUT TRAILING EDGE	66.463	(IN)
COMBUSTOR EXIT	66.463	(IN)

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.708	B
1C	44.300	
2A	50.183	D
2C	46.250	E
3A	55.073	
3B	57.658	
4	46.208	

2/13/75

READING = 0089 BLOCK = 143 TIME = 316.473 MACH 7.3 PT = 995.494 TT = 2722.1

RAMJET PERFORMANCE

SUMMARY REPORT

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A		A/AC	PCRIT	C	ISAC	PHT	ETAC
WIND TUNNEL		1	0 5														
0.000	995.499	2723	587.1(714)	1.3019	28.909	2469											
0.000	0.156	256	-67.7(61)	1.3947	28.908	784	7.302	5724	1.779	0.06518	16.528	0.9901	2980	5.798	180.3		
SPIKE TIP +8		2	0 6														
0.600	11.175	2723	587.1(714)	1.3019	28.908	2469											
0.600	10.223	2667	570.6(698)	1.3037	28.908	2445	0.372	909	2.087	0.06518	16.528	0.9901	3059	0.921	185.1		
WIND TUNNEL		3	0 0														
0.000	995.499	2723	587.1(714)	1.3019	28.909	2469											
0.000	0.163	259	-66.9(62)	1.3949	28.908	789	7.251	5721	1.779	0.06727	17.059	0.9901	3075	5.981	180.2		
SPIKE TIP +8		4	0 0														
0.600	11.175	2723	587.1(714)	1.3019	28.908	2469											
0.600	10.152	2663	569.3(697)	1.3039	28.908	2444	0.386	943	2.087	0.06727	17.059	0.9901	3075	0.986	180.2		
INLET THROAT		5	0 4														
40.400	332.041	2618	556.1(684)	1.3053	28.909	2424											
40.400	10.420	1092	136.4(266)	1.3733	28.908	1606	2.854	4583	1.843	0.81836	16.528	0.0789	2565	58.282	155.2		
INLET UPNRSK		6	0 3														
40.400	332.041	2618	556.1(684)	1.3053	28.909	2424											
40.400	8.980	1048	125.5(255)	1.3760	28.908	1575	2.947	4642	1.843	0.70396	16.528	0.0867	2584	53.669	156.4		
INLET DNNRSK		7	0 4														
40.400	104.177	2618	556.1(684)	1.3053	28.908	2424											
40.400	90.605	2534	531.4(659)	1.3081	28.908	2387	0.466	1112	1.922	0.70396	16.528	0.0867	2584	12.857	156.4		
COMBUSTOR	0	8	1 10														
40.410	239.443	2588	564.7(721)	1.3083	26.979	2498											
40.410	13.261	1251	169.8(328)	1.3648	26.979	1774	2.506	4445	1.972	0.82283	16.620	0.0789	2564	56.845	154.3	0.18	0.07
COMBUSTOR	0	9	2 5														
40.733	171.741	2826	561.9(792)	1.2974	27.244	2587											
40.733	18.122	1640	202.8(435)	1.3407	27.244	2003	2.116	4239	2.017	0.82585	16.620	0.0786	2555	54.408	153.7	0.18	0.33
COMBUSTOR	0	10	3 21														
41.223	216.454	2546	557.5(709)	1.3099	26.959	2480											
41.223	12.426	1239	172.4(325)	1.3656	26.959	1767	2.485	4390	1.975	0.81959	16.620	0.0792	2520	55.911	151.6	0.18	0.05
COMBUSTOR	0	11	4 3														
41.500	204.997	2494	554.9(693)	1.3122	26.913	2459											
41.500	13.805	1262	192.2(331)	1.3646	26.913	1784	2.388	4260	1.973	0.81147	16.620	0.0800	2483	53.721	149.4	0.18	0.00
COMBUSTOR	0	12	5 4														
42.460	110.879	2630	544.6(733)	1.3056	27.091	2510											
42.460	21.095	1756	280.6(470)	1.3368	27.091	2076	1.751	3634	2.031	0.76526	16.620	0.0848	2336	43.221	140.5	0.18	0.18
COMBUSTOR	0	13	6 8														
42.708	103.023	2465	547.0(711)	1.3140	25.861	2495											
42.708	21.674	1676	301.5(467)	1.3432	25.861	2080	1.685	3504	2.086	0.75841	16.679	0.0859	2293	41.304	137.5	0.29	0.05
COMBUSTOR	0	14	7 2														
42.718	102.911	2462	546.8(710)	1.3141	25.859	2494											
42.718	21.698	1675	301.9(466)	1.3432	25.859	2080	1.683	3501	2.086	0.75876	16.679	0.0858	2292	41.279	137.4	0.29	0.04
COMBUSTOR	0	15	8 2														
42.783	101.169	2450	546.0(707)	1.3146	25.850	2489											
42.783	21.850	1677	305.3(467)	1.3433	25.850	2081	1.668	3470	2.086	0.75645	16.679	0.0861	2281	40.797	136.7	0.29	0.04
COMBUSTOR	0	16	9 3														
44.310	70.273	2452	527.1(707)	1.3138	25.911	2486											
44.310	36.964	2099	415.2(595)	1.3260	25.911	2311	1.024	2366	2.113	0.69887	16.679	0.0932	2109	25.701	126.4	0.29	0.08
COMBUSTOR	0	17	10 4														
44.800	68.526	2342	521.1(673)	1.3186	25.820	2439											
44.800	41.814	2076	437.2(589)	1.3279	25.820	2304	0.889	2049	2.102	0.68978	16.679	0.0944	2073	21.966	124.3	0.29	0.02
COMBUSTOR	0	18	11 21														
45.503	47.255	2293	512.8(658)	1.3225	25.798	2416											
45.503	44.827	2076	444.5(590)	1.3281	25.797	2305	0.801	1848	2.097	0.68609	16.679	0.0949	2048	19.704	122.8	0.29	0.00

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READING = 0089  BLOCK = 143  TIME = 316.473  MACH  7.5  PT = 995.099  TT = 2722.9

                 P      T       H            GAMMA  MOLWT  SONV  MACH  VEL   S      A/A*      .      A/AC    MFTR     .     IVAC  DOT  ETAC
COMBUSTOR         0    19    12   3
46.218       65.270  2325   504.3( 666) 1.3188 25.853 2027
46.218       35.508  2001   403.3( 564) 1.3392 25.853 2263 0.904 2208 2.105 0.56735 16.679 0.0976   2053 23.315 123.1 0.29 0.04
COMBUSTOR         0    20    13  21
46.250       59.793  2278   521.7( 718) 1.3236 23.386 2532
46.250       35.091  1996   425.0( 622) 1.3337 23.385 2379 0.924 2199 2.274 0.67162 16.833 0.0979   2030 22.553 120.6 0.59 0.04
COMBUSTOR         0    21    14  21
46.260       61.170  2162   521.6( 686) 1.3260 23.301 2466
46.260       34.960  1897   424.4( 589) 1.3385 23.301 2328 0.947 2205 2.259 0.67132 16.833 0.0979   2030 23.002 120.6 0.59 0.01
COMBUSTOR         0    22    15  21
46.943       57.167  2144   513.5( 673) 1.3295 23.289 2407
46.943       26.059  1759   383.0( 543) 1.3441 23.289 2247 1.137 2555 2.259 0.63896 16.833 0.1029   2023 25.368 120.2 0.59 0.00
COMBUSTOR         0    23    16  21
47.310       54.629  2129   509.1( 668) 1.3301 23.287 2459
47.310       23.928  1728   373.6( 535) 1.3454 23.287 2228 1.168 2603 2.261 0.62225 16.833 0.1096   2009 25.175 119.4 0.59 0.00
COMBUSTOR         0    24    17  21
48.110       49.840  2101   499.6( 659) 1.3311 23.287 2444
48.110       21.307  1695   362.7( 522) 1.3468 23.287 2208 1.185 2617 2.264 0.57190 16.833 0.1149   1998 23.261 118.7 0.59 0.00
COMBUSTOR         0    25    18  21
48.743       24.903  2568   492.2( 813) 1.3292 23.724 2650
48.743        7.200  1899   261.5( 584) 1.3333 23.725 2303 1.475 3397 2.376 0.52038 16.833 0.1243   2010 27.475 119.4 0.59 0.18
COMBUSTOR         0    26    19  21
50.183       33.113  2128   491.9( 714) 1.3311 21.768 2543
50.183       10.994  1607   305.0( 527) 1.3519 21.768 2228 1.373 3058 2.433 0.42650 16.954 0.1592   2049 20.269 120.8 0.82 0.04
COMBUSTOR         0    27    20  21
50.193       35.745  2003   491.8( 671) 1.3370 21.668 2479
50.193       11.020  1479   305.2( 484) 1.3592 21.668 2147 1.423 3056 2.407 0.42594 16.954 0.1554   2049 20.229 120.9 0.82 0.01
COMBUSTOR         0    28    21  21
50.723       37.051  1974   488.0( 660) 1.3383 21.653 2463
50.723       12.417  1488   315.2( 488) 1.3589 21.653 2155 1.364 2940 2.399 0.39836 16.954 0.1662   2078 16.199 122.5 0.82 0.00
COMBUSTOR         0    29    22  21
52.133       36.678  1946   478.8( 650) 1.3394 21.651 2447
52.133       10.475  1405   287.5( 459) 1.3631 21.651 2097 1.475 3094 2.394 0.33951 16.954 0.1950   2153 16.324 127.0 0.82 0.00
COMBUSTOR         0    30    23   4
54.233       33.146  2041   464.4( 685) 1.3344 21.682 2499
54.233        9.000  1459   257.0( 479) 1.3592 21.682 2132 1.511 3222 2.425 0.27884 16.989 0.2379   2249 13.961 132.4 0.83 0.04
COMBUSTOR         0    31    24   3
54.733       31.970  2086   461.9( 701) 1.3322 21.724 2522
54.733        8.800  1499   252.0( 491) 1.3567 21.724 2157 1.542 3241 2.435 0.26745 16.989 0.2480   2270 13.469 133.6 0.83 0.05
COMBUSTOR         0    32    25   4
55.483       30.379  2152   458.1( 724) 1.3289 21.786 2555
55.483        8.527  1558   244.7( 511) 1.3531 21.786 2194 1.490 3268 2.449 0.25211 16.989 0.2631   2300 12.804 135.4 0.83 0.07
COMBUSTOR         0    33    26   3
55.760       29.850  2176   456.8( 732) 1.3278 21.809 2566
55.760        8.426  1579   242.0( 518) 1.3518 21.809 2206 1.486 3279 2.453 0.24691 16.989 0.2686   2311 12.581 136.0 0.83 0.08
COMBUSTOR         0    34    27   4
56.243       25.862  2261   454.6( 762) 1.3237 21.884 2608
56.243        6.162  1575   207.1( 519) 1.3512 21.884 2199 1.601 3519 2.478 0.19504 16.989 0.3401   2395 10.667 141.0 0.83 0.10
COMBUSTOR         0    35    28   5
57.668       31.516  2073   448.8( 696) 1.3324 21.743 2513
57.668        3.968  1269   144.1( 391) 1.3714 21.743 1947 2.005 3904 2.433 0.18030 16.989 0.3679   2455 10.939 143.4 0.83 0.06
COMBUSTOR         0    36    29   5
57.723       23.707  2378   448.6( 804) 1.3180 21.995 2662
57.723        6.064  1694   199.7( 555) 1.3443 21.995 2269 1.555 3529 2.499 0.17976 16.989 0.3690   2436  9.858 143.4 0.83 0.14
COMBUSTOR         0    37    30   3
57.863       23.903  2361   446.1( 797) 1.3188 21.981 2654
57.863        5.853  1662   194.4( 544) 1.3459 21.981 2249 1.564 3562 2.496 0.17650 16.989 0.3716   2058  9.882 143.5 0.83 0.14
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                 P       T      H              GAMMA  MOLWT SONV  MACH  VEL    S      W/A       W       A/AC    MOMTM    F      IVAC  PHI  ETAC
COMBUSTOR         0     38   31  15
57.943      39.402 1938   447.7( 668) 1.3369 21.637 2362
57.943       3.191  939   118.3( 319) 1.3833 21.637 1773 2.289 4060 2.392 0.18050 16.989 0.3675   2040 11.389 143.6 0.83 0.02
COMBUSTOR         0     39   32  21
58.223      45.959 1865   446.7( 623) 1.3425 21.581 2401
58.223       2.300  832    91.5( 268) 1.3907 21.581 1633 2.582 4216 2.365 0.17990 16.989 0.3687   2043 11.787 143.8 0.83 0.00
COMBUSTOR         0     40   33  21
58.449      47.365 1852   445.9( 618) 1.3431 21.572 2390
58.449       2.080  796    83.0( 256) 1.3922 21.572 1598 2.666 4259 2.360 0.17960 16.989 0.3693   2046 11.888 144.0 0.83 0.00
COMBUSTOR         0     41   34  21
59.173      44.653 1844   443.6( 616) 1.3434 21.571 2390
59.173       1.375  716    58.1( 230) 1.3951 21.571 1518 2.894 4392 2.364 0.17675 16.989 0.3753   2452 12.065 144.3 0.83 0.00
COMBUSTOR         0     42   35   6
60.193      21.082 2600   440.4( 883) 1.3074 22.204 2759
60.193       7.475 2316   223.3( 667) 1.3264 22.204 2449 1.346 3296 2.531 0.17542 16.989 0.3777   2463  8.995 145.0 0.83 0.21
COMBUSTOR         0     43   36   4
62.203      21.083 2775   433.2( 946) 1.2990 22.375 2830
62.203      10.512 2358   274.9( 789) 1.3135 22.375 2623 1.073 2815 2.549 0.18173 16.989 0.3650   2469  7.950 145.3 0.83 0.26
COMBUSTOR         0     44   37   3
63.623      21.636 2790   427.9( 950) 1.2982 22.400 2839
63.623      11.212 2392   277.1( 801) 1.3119 22.400 2639 1.041 2747 2.547 0.18666 16.989 0.3553   2071  7.970 145.5 0.83 0.27
COMBUSTOR         0     45   38   3
66.087      20.528 2805   417.9( 956) 1.2971 22.438 2840
66.087      11.230 2438   278.1( 817) 1.3098 22.438 2660 0.995 2645 2.592 0.17693 16.989 0.3749   2475  7.274 145.7 0.83 0.28
COMBUSTOR         0     46   39   5
66.463      20.787 2574   416.3( 872) 1.3079 22.236 2744
66.463       6.097 1943   182.8( 600) 1.3309 22.237 2404 1.422 3418 2.529 0.16449 16.989 0.4032   2476  8.737 145.7 0.83 0.22
COMBUSTOR   REGEN   47   40   4
66.463      20.787 2933   554.6(1009) 1.2954 22.236 2914
66.463       7.992 2344   329.9( 786) 1.3158 22.237 2624 1.277 3353 2.579 0.16449 16.989 0.4032   2596  8.571 152.8 0.83 0.22
NOZZLE   AE         48   41   5
88.699      20.787 2574   416.3( 870) 1.3079 22.236 2744
88.699       0.419  945 -158.3( 299) 1.3800 22.237 1707 3.141 5362 2.529 0.03424 16.989 1.9371   3039  2.853 178.9 0.83 0.22
NOZZLE   PO         49   42   5
88.699      20.787 2574   416.3( 870) 1.3079 22.236 2744
88.699       0.156  718 -231.3( 226) 1.3897 22.237 1493 3.813 5693 2.529 0.01780 16.989 3.7263   3159  1.575 185.7 0.83 0.22
NOZZLE   AE REGEN   50   43   5
88.699      20.787 2933   554.6(1008) 1.2950 22.236 2914
88.699       0.476 1141  -94.2( 363) 1.3700 22.237 1869 3.048 5696 2.579 0.03424 16.989 1.9371   3245  3.032 191.0 0.83 0.22
NOZZLE   PO REGEN   51   44   5
88.699      20.787 2933   554.6(1008) 1.2954 22.236 2914
88.699       0.156  840 -192.3( 265) 1.3848 22.237 1612 3.792 6113 2.579 0.01634 16.989 4.0599   3390  1.552 199.6 0.83 0.22
FICTIVE COMBUSTR    69   62   0
66.463     332.041 5005   416.3(1781) 1.1860 24.741 3454
66.463       0.156  964-1189.5( 283) 1.3563 24.980 1613 5.556 8964 2.423 0.02343 16.989 2.8307   4846  3.264 285.3 0.83 1.00
FICTIVE NOZZLE      70   63   0
88.699      91.624 2512   392.6( 849) 1.3101 22.237 2712
88.699       0.259  622 -261.7( 195) 1.3927 22.237 1392 4.111 5722 2.438 0.03424 16.989 1.9371   3150  3.045 185.4 0.83 0.22
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XABS	P-IR	P-OR	ORA	COX	C-IR	C-OR	CA-ALT	P-TO/PSO	P-IR/PTO	P-OR/PSO	P-CH/PTO
6.981E-01	6.900E-01	0.000	-2.497E-01	0.000	0.000	0.000	2.570E-02	4.925E 00	6.931E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.236E 01	0.000	0.000	0.000	1.630E 02	4.925E 00	6.931E-04	0.000	0.000
3.070E 01	1.135E 00	0.000	-9.696E 01	0.000	0.000	0.000	5.553E 02	7.279E 00	1.140E-03	0.000	0.000
3.504E 01	2.006E 00	0.000	-1.987E 02	0.000	0.000	0.000	6.404E 02	1.286E 01	2.015E-03	0.000	0.000
3.555E 01	2.155E 00	0.000	-2.177E 02	0.000	0.000	0.000	7.013E 02	1.382E 01	2.165E-03	0.000	0.000
3.606E 01	2.075E 00	0.000	-2.391E 02	-2.231E 02	-2.231E 02	0.000	7.246E 02	1.331E 01	2.084E-03	0.000	0.000
3.648E 01	2.279E 00	0.000	-2.578E 02	-2.285E 02	-2.285E 02	0.000	7.343E 02	1.462E 01	2.290E-03	0.000	0.000
3.660E 01	2.303E 00	3.111E 00	-2.957E 02	-2.301E 02	-2.301E 02	0.000	7.500E 02	1.477E 01	2.314E-03	1.995E 01	3.125E-03
3.661E 01	2.305E 00	3.131E 00	-2.958E 02	-2.301E 02	-2.301E 02	0.000	7.503E 02	1.478E 01	2.315E-03	2.006E 01	3.145E-03
3.701E 01	2.385E 00	4.428E 00	-2.979E 02	-2.356E 02	-2.356E 02	0.000	7.921E 02	1.530E 01	2.396E-03	2.840E 01	4.448E-03
3.727E 01	2.282E 00	5.275E 00	-2.970E 02	-2.393E 02	-2.393E 02	0.000	8.197E 02	1.463E 01	2.292E-03	3.383E 01	5.299E-03
3.803E 01	1.985E 00	8.266E 00	-2.794E 02	-2.506E 02	-2.506E 02	0.000	9.009E 02	1.273E 01	1.994E-03	5.301E 01	8.304E-03
3.873E 01	6.551E 00	1.104E 01	-2.781E 02	-3.190E 02	-2.693E 02	-4.966E 01	9.795E 02	4.201E 01	6.580E-03	7.083E 01	1.109E-02
3.875E 01	6.661E 00	1.100E 01	-2.783E 02	-3.204E 02	-2.700E 02	-5.044E 01	9.814E 02	4.272E 01	6.691E-03	7.054E 01	1.105E-02
3.901E 01	8.350E 00	1.031E 01	-2.835E 02	-3.435E 02	-2.811E 02	-6.237E 01	1.011E 03	5.355E 01	8.388E-03	6.612E 01	1.036E-02
3.950E 01	1.164E 01	9.013E 00	-3.021E 02	-3.941E 02	-3.094E 02	-8.474E 01	1.067E 03	7.465E 01	1.169E-02	5.781E 01	9.054E-03
3.975E 01	1.127E 01	8.344E 00	-3.119E 02	-4.242E 02	-3.280E 02	-9.624E 01	1.096E 03	7.228E 01	1.132E-02	5.351E 01	8.381E-03
4.000E 01	1.091E 01	8.058E 00	-3.187E 02	-4.564E 02	-3.490E 02	-1.074E 02	1.125E 03	6.997E 01	1.096E-02	5.166E 01	8.090E-03
4.022E 01	1.309E 01	7.600E 00	-3.262E 02	-4.872E 02	-3.697E 02	-1.175E 02	1.151E 03	8.396E 01	1.315E-02	5.002E 01	7.835E-03
4.040E 01	1.482E 01	1.140E 01	-3.322E 02	-5.121E 02	-3.866E 02	-1.255E 02	1.171E 03	9.507E 01	1.489E-02	7.309E 01	1.145E-02
4.041E 01	1.492E 01	1.160E 01	-3.324E 02	-5.135E 02	-3.876E 02	-1.259E 02	1.172E 03	9.570E 01	1.499E-02	7.440E 01	1.165E-02
4.073E 01	1.808E 01	1.816E 01	-3.367E 02	-5.602E 02	-4.197E 02	-1.405E 02	1.210E 03	1.160E 02	1.816E-02	1.165E 02	1.824E-02
4.122E 01	2.288E 01	1.975E 00	-3.638E 02	-6.337E 02	-4.716E 02	-1.621E 02	1.268E 03	1.467E 02	2.298E-02	1.267E 01	1.984E-03
4.190E 01	2.559E 01	2.023E 00	-3.956E 02	-6.769E 02	-5.028E 02	-1.741E 02	1.301E 03	1.641E 02	2.570E-02	1.298E 01	2.032E-03
4.246E 01	4.000E 01	2.191E 00	-5.295E 02	-8.486E 02	-6.186E 02	-2.300E 02	1.415E 03	2.565E 02	4.018E-02	1.405E 01	2.200E-03
4.271E 01	4.112E 01	2.234E 00	-5.681E 02	-8.986E 02	-6.432E 02	-2.554E 02	1.444E 03	2.637E 02	4.130E-02	1.433E 01	2.244E-03
4.272E 01	4.116E 01	2.236E 00	-5.696E 02	-9.006E 02	-6.443E 02	-2.563E 02	1.445E 03	2.640E 02	4.135E-02	1.434E 01	2.246E-03
4.278E 01	4.145E 01	2.247E 00	-5.796E 02	-9.139E 02	-6.516E 02	-2.623E 02	1.453E 03	2.658E 02	4.164E-02	1.441E 01	2.257E-03
4.431E 01	4.832E 01	2.561E 01	-7.336E 02	-1.229E 03	-8.005E 02	-4.284E 02	1.637E 03	3.099E 02	4.854E-02	1.642E 02	2.572E-02
4.480E 01	5.052E 01	3.310E 01	-7.646E 02	-1.328E 03	-8.392E 02	-4.892E 02	1.697E 03	3.240E 02	5.075E-02	2.123E 02	3.325E-02
4.550E 01	4.580E 01	4.386E 01	-7.846E 02	-1.468E 03	-8.911E 02	-5.757E 02	1.783E 03	2.937E 02	4.601E-02	2.813E 02	4.405E-02
4.622E 01	4.099E 01	3.002E 01	-7.736E 02	-1.610E 03	-9.424E 02	-6.671E 02	1.870E 03	2.629E 02	4.118E-02	1.926E 02	3.016E-02
4.625E 01	4.078E 01	2.940E 01	-7.724E 02	-1.616E 03	-9.447E 02	-6.712E 02	1.874E 03	2.615E 02	4.096E-02	1.886E 02	2.954E-02
4.626E 01	4.071E 01	2.921E 01	-7.722E 02	-1.618E 03	-9.454E 02	-6.725E 02	1.875E 03	2.611E 02	4.089E-02	1.873E 02	2.934E-02
4.694E 01	3.612E 01	1.600E 01	-7.729E 02	-1.754E 03	-9.931E 02	-7.613E 02	1.959E 03	2.316E 02	3.628E-02	1.026E 02	1.607E-02
4.731E 01	3.365E 01	1.421E 01	-7.832E 02	-1.828E 03	-1.018E 03	-8.096E 02	2.005E 03	2.158E 02	3.380E-02	9.110E 01	1.427E-02
4.811E 01	3.240E 01	1.029E 01	-7.877E 02	-1.967E 03	-1.072E 03	-9.194E 02	2.104E 03	2.078E 02	3.255E-02	6.602E 01	1.034E-02
4.874E 01	7.200E 00	7.200E 00	-7.689E 02	-2.112E 03	-1.113E 03	-9.993E 02	2.183E 03	4.618E 01	7.233E-03	4.618E 01	7.233E-03
5.018E 01	1.099E 01	1.099E 01	-7.014E 02	-2.351E 03	-1.202E 03	-1.149E 03	2.363E 03	7.051E 01	1.104E-02	7.051E 01	1.104E-02
5.019E 01	1.102E 01	1.102E 01	-7.008E 02	-2.353E 03	-1.203E 03	-1.150E 03	2.364E 03	7.068E 01	1.107E-02	7.068E 01	1.107E-02
5.072E 01	1.242E 01	1.242E 01	-6.664E 02	-2.418E 03	-1.235E 03	-1.183E 03	2.430E 03	7.963E 01	1.247E-02	7.963E 01	1.247E-02
5.213E 01	1.047E 01	1.047E 01	-5.838E 02	-2.573E 03	-1.315E 03	-1.258E 03	2.608E 03	6.718E 01	1.052E-02	6.718E 01	1.052E-02
5.423E 01	9.000E 00	9.000E 00	-4.766E 02	-2.761E 03	-1.426E 03	-1.355E 03	2.874E 03	5.772E 01	9.041E-03	5.772E 01	9.041E-03
5.473E 01	8.800E 00	8.800E 00	-4.534E 02	-2.825E 03	-1.450E 03	-1.374E 03	2.938E 03	5.644E 01	8.840E-03	5.644E 01	8.840E-03
5.548E 01	8.527E 00	8.527E 00	-4.199E 02	-2.888E 03	-1.486E 03	-1.402E 03	3.034E 03	5.468E 01	8.565E-03	5.468E 01	8.565E-03
5.576E 01	8.426E 00	8.426E 00	-4.079E 02	-2.910E 03	-1.499E 03	-1.412E 03	3.069E 03	5.404E 01	8.464E-03	5.404E 01	8.464E-03
5.624E 01	4.075E 00	8.250E 00	-3.227E 02	-2.948E 03	-1.519E 03	-1.429E 03	3.102E 03	2.613E 01	4.093E-03	5.291E 01	8.287E-03
5.767E 01	3.968E 00	3.968E 00	-2.792E 02	-3.047E 03	-1.572E 03	-1.475E 03	3.209E 03	2.545E 01	3.986E-03	2.545E 01	3.986E-03
5.772E 01	8.325E 00	3.803E 00	-2.781E 02	-3.050E 03	-1.574E 03	-1.476E 03	3.217E 03	5.339E 01	8.363E-03	2.439E 01	3.820E-03
5.786E 01	8.325E 00	3.382E 00	-2.758E 02	-3.059E 03	-1.579E 03	-1.481E 03	3.234E 03	5.339E 01	8.363E-03	2.169E 01	3.397E-03
5.794E 01	3.141E 00	3.141E 00	-2.745E 02	-3.064E 03	-1.581E 03	-1.483E 03	3.245E 03	2.015E 01	3.156E-03	2.015E 01	3.156E-03
5.822E 01	2.300E 00	2.300E 00	-2.709E 02	-3.081E 03	-1.591E 03	-1.491E 03	3.280E 03	1.475E 01	2.310E-03	1.475E 01	2.310E-03
5.845E 01	2.080E 00	2.080E 00	-2.688E 02	-3.095E 03	-1.598E 03	-1.496E 03	3.309E 03	1.334E 01	2.089E-03	1.334E 01	2.089E-03
5.917E 01	1.375E 00	1.375E 00	-2.641E 02	-3.134E 03	-1.621E 03	-1.512E 03	3.402E 03	8.818E 00	1.381E-03	8.818E 00	1.381E-03
6.019E 01	7.475E 00	7.475E 00	-2.538E 02	-3.189E 03	-1.651E 03	-1.538E 03	3.532E 03	4.794E 01	7.509E-03	4.794E 01	7.509E-03
6.220E 01	1.051E 01	1.051E 01	-2.517E 02	-3.311E 03	-1.702E 03	-1.609E 03	3.790E 03	6.742E 01	1.056E-02	6.742E 01	1.056E-02

READING = 0089 BLOCK = 143 TIME = 316.173 MACH 7.3 PI = 995.099 TI = 2722.9

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CANALI	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.362E 01	1.121E 01	1.121E 01	-2.517E 02	-3.401E 03	-1.737E 03	-1.664E 03	3.972E 03	7.191E 01	1.126E-02	7.191E 01	1.126E-02
6.609E 01	1.123E 01	1.123E 01	-2.517E 02	-3.571E 03	-1.804E 03	-1.767E 03	4.280E 03	7.202E 01	1.128E-02	7.202E 01	1.128E-02
6.646E 01	1.760E 00	1.123E 01	-2.517E 02	-3.596E 03	-1.815E 03	-1.785E 03	4.337E 03	1.129E 01	1.768E-03	7.204E 01	1.128E-02
6.650E 01	1.760E 00	1.123E 01	-2.517E 02	-3.601E 03	-1.816E 03	-1.785E 03	4.342E 03	1.129E 01	1.768E-03	7.204E 01	1.128E-02
6.670E 01	2.145E 00	1.123E 01	-2.517E 02	-3.615E 03	-1.822E 03	-1.794E 03	4.368E 03	1.376E 01	2.159E-03	7.205E 01	1.129E-02
6.836E 01	3.345E 00	7.428E 00	-1.719E 02	-3.713E 03	-1.860E 03	-1.852E 03	4.584E 03	3.428E 01	5.369E-03	4.764E 01	7.462E-03
6.980E 01	2.335E 00	4.126E 00	5.514E 01	-3.777E 03	-1.883E 03	-1.895E 03	4.761E 03	1.498E 01	2.346E-03	2.646E 01	4.145E-03
7.052E 01	1.813E 00	2.475E 00	1.232E 02	-3.806E 03	-1.891E 03	-1.917E 03	4.849E 03	1.162E 01	1.821E-03	1.587E 01	2.486E-03
7.113E 01	1.370E 00	2.253E 00	1.655E 02	-3.832E 03	-1.897E 03	-1.936E 03	4.923E 03	8.786E 00	1.376E-03	1.445E 01	2.263E-03
7.251E 01	9.400E-01	1.751E 00	2.399E 02	-3.877E 03	-1.907E 03	-1.969E 03	5.049E 03	6.029E 00	9.442E-04	1.123E 01	1.759E-03
7.404E 01	6.977E-01	1.195E 00	2.882E 02	-3.913E 03	-1.917E 03	-1.996E 03	5.273E 03	4.218E 00	6.606E-04	7.664E 00	1.200E-03
7.419E 01	6.300E-01	1.076E 00	2.919E 02	-3.916E 03	-1.917E 03	-1.998E 03	5.291E 03	4.040E 00	6.328E-04	6.900E 00	1.081E-03
7.494E 01	6.967E-01	4.800E-01	3.169E 02	-3.933E 03	-1.921E 03	-2.012E 03	5.375E 03	4.468E 00	6.999E-04	3.078E 00	4.822E-04
7.495E 01	6.971E-01	4.768E-01	3.178E 02	-3.933E 03	-1.921E 03	-2.012E 03	5.375E 03	4.476E 00	7.002E-04	3.058E 00	4.790E-04
7.627E 01	8.150E-01	0.000	3.338E 02	-3.966E 03	-1.927E 03	-2.039E 03	5.427E 03	5.227E 00	8.187E-04	0.000	0.000
7.912E 01	1.105E 00	0.000	3.722E 02	-3.975E 03	-1.936E 03	-2.039E 03	5.525E 03	7.087E 00	1.110E-03	0.000	0.000
8.302E 01	7.000E-01	0.000	4.108E 02	-3.983E 03	-1.944E 03	-2.039E 03	5.630E 03	4.489E 00	7.032E-04	0.000	0.000
8.583E 01	6.850E-01	0.000	4.262E 02	-3.990E 03	-1.950E 03	-2.039E 03	5.685E 03	4.393E 00	6.881E-04	0.000	0.000
8.869E 01	9.150E-01	0.000	4.455E 02	-4.001E 03	-1.962E 03	-2.039E 03	5.707E 03	5.868E 00	9.191E-04	0.000	0.000
8.870E 01	9.155E-01	0.000	4.455E 02	-4.001E 03	-1.962E 03	-2.039E 03	5.707E 03	5.871E 00	9.196E-04	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.373E 01	8.373E 01	2.109E-03	5.461E-02
4.041E 01	1.626E-01	8.389E 01	2.707E-03	5.473E-02
4.073E 01	5.330E 00	8.922E 01	2.362E-03	5.256E-02
4.122E 01	7.910E 00	9.713E 01	2.616E-03	3.772E-02
4.150E 01	4.499E 00	1.016E 02	2.403E-03	4.256E-02
4.246E 01	1.392E 01	1.155E 02	2.433E-03	5.204E-02
4.271E 01	3.557E 00	1.191E 02	3.041E-03	4.766E-02
4.272E 01	1.405E-01	1.192E 02	2.766E-03	5.196E-02
4.278E 01	8.866E-01	1.201E 02	2.778E-03	5.180E-02
4.431E 01	1.792E 01	1.381E 02	3.079E-03	5.659E-02
4.480E 01	4.455E 00	1.425E 02	3.200E-03	5.447E-02
4.550E 01	5.719E 00	1.482E 02	3.201E-03	5.412E-02
4.622E 01	5.906E 00	1.541E 02	3.071E-03	5.341E-02
4.625E 01	2.991E-01	1.544E 02	3.517E-03	4.646E-02
4.626E 01	9.919E-02	1.545E 02	3.179E-03	5.317E-02
4.698E 01	6.332E 00	1.609E 02	3.046E-03	4.861E-02
4.731E 01	3.486E 00	1.643E 02	3.030E-03	4.623E-02
4.811E 01	7.260E 00	1.716E 02	3.019E-03	4.203E-02
4.874E 01	6.010E 00	1.776E 02	2.999E-03	2.195E-02
5.018E 01	1.420E 01	1.918E 02	3.613E-03	2.266E-02
5.019E 01	8.465E-02	1.919E 02	3.061E-03	2.716E-02
5.072E 01	3.828E 00	1.957E 02	2.933E-03	2.966E-02
5.213E 01	8.799E 00	2.045E 02	2.809E-03	2.673E-02
5.423E 01	1.112E 01	2.157E 02	2.707E-03	2.391E-02
5.473E 01	2.398E 00	2.180E 02	2.769E-03	2.273E-02
5.548E 01	3.506E 00	2.216E 02	2.791E-03	2.165E-02
5.576E 01	1.268E 00	2.228E 02	2.843E-03	2.118E-02
5.624E 01	1.057E 00	2.239E 02	2.740E-03	1.669E-02
5.767E 01	3.172E 00	2.271E 02	2.713E-03	1.246E-02
5.772E 01	1.955E-01	2.272E 02	2.624E-03	1.678E-02
5.786E 01	4.822E-01	2.277E 02	2.874E-03	1.511E-02
5.794E 01	3.228E-01	2.281E 02	3.058E-03	9.652E-03
5.822E 01	1.105E 00	2.292E 02	2.289E-03	9.699E-03
5.845E 01	7.599E-01	2.299E 02	2.164E-03	9.373E-03
5.917E 01	2.377E 00	2.323E 02	2.122E-03	7.042E-03
6.019E 01	3.138E 00	2.354E 02	2.438E-03	1.990E-02
6.220E 01	6.031E 00	2.415E 02	3.083E-03	1.860E-02
6.362E 01	4.536E 00	2.460E 02	3.173E-03	1.852E-02
6.609E 01	7.692E 00	2.537E 02	3.212E-03	1.790E-02
6.646E 01	1.228E 00	2.549E 02	3.146E-03	1.421E-02
6.650E 01	1.378E-01	2.551E 02	2.998E-03	1.487E-02
6.670E 01	6.731E-01	2.557E 02	3.006E-03	1.506E-02
6.836E 01	5.657E 00	2.614E 02	2.992E-03	1.472E-02
6.980E 01	4.235E 00	2.656E 02	2.842E-03	9.901E-03
7.052E 01	1.751E 00	2.674E 02	2.760E-03	7.549E-03
7.113E 01	1.289E 00	2.687E 02	2.728E-03	6.726E-03
7.251E 01	2.570E 00	2.712E 02	2.671E-03	5.463E-03
7.404E 01	2.369E 00	2.736E 02	2.601E-03	4.183E-03
7.419E 01	1.934E-01	2.738E 02	2.566E-03	3.941E-03
7.494E 01	8.295E-01	2.746E 02	2.518E-03	3.010E-03
7.495E 01	1.410E-03	2.746E 02	2.518E-03	3.005E-03
7.627E 01	5.003E-01	2.751E 02	2.569E-03	3.799E-03
7.912E 01	1.140E 00	2.763E 02	2.609E-03	4.697E-03
8.302E 01	1.162E 00	2.774E 02	2.512E-03	5.360E-03
8.583E 01	5.171E-01	2.779E 02	2.496E-03	5.290E-03
8.869E 01	2.326E-01	2.782E 02	2.535E-03	4.034E-03

READING = 0089 BLOCK = 103 TIME = 316.473 MACH 7.5 PT = 995.699 TT = 2722.9

X	DDRAG	CDRAG	CF	HC
8.870E 01	0.000	2.782E 02	2.535E-03	4.035E-03

ORIGINAL PAGE IS
OF POOR QUALITY

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	169.	(LBF)
MEASURED THRUST	1024.	(LBF)
CALCULATED SPECIFIC IMPULSE	390.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2364.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.1139	
MEASURED THRUST COEFFICIENT	0.6898	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	3363.	(LBF)
NET THRUST	382.	(LBF)
SPECIFIC IMPULSE	881.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.2572	

MOMENTUM AND FORCES

INLET FRICTION DRAG	83.7	(LBF)
INLET MOMENTUM CHANGE	-416.0	(LBF)
COMBUSTOR FRICTION DRAG	171.2	(LBF)
COMBUSTOR STRUT DRAG	-40.70	(LBF)
COMBUSTOR MOMENTUM CHANGE	-89.	(LBF)
NOZZLE FRICTION DRAG	23.26	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	674.	(LBF)
NOZZLE PRESSURE INTEGRAL	697.	(LBF)
EXTERNAL FRICTION DRAG	72.05	(LBF)
EXTERNAL PRESSURE INTEGRAL	-683.	(LBF)
TOTAL EXTERNAL DRAG	-755.	(LBF)
TOTAL STRUT DRAG	-40.70	(LBF)
CAVITY FORCE	-636.	(LBF)
CALCULATED LOAD CELL FORCE	-1222.	(LBF)
MEASURED LOAD CELL FORCE	-367.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0, -154.4, -124.8,	

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9901	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1633	
DELTA PT2	0.0924	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3335	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1046	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9083	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9162	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9241	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8760	
ENTHALPY AT PO - SUPERSONIC	-49.01	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-17.52	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0262
EQUIVALENCE RATIO	0.832
COMBUSTOR EFFICIENCY	0.219
TOTAL PRESSURE RATIO	0.0626
COMBUSTOR EFFECTIVENESS	0.2573
INJECTOR DISCHARGE COEFFICIENTS	0.9607, 0.4742, 1.0235, 0.6134

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	1.0363
NOZZLE COEFFICIENT - CT	0.9739
PROCESS EFFICIENCY	1.1720
KINETIC ENERGY EFFICIENCY	1.0677

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7230	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.607	(IN)
NOZZLE SHROUD TRAILING EDGE	74.947	(IN)
NOZZLE PLUG TRAILING EDGE	68.699	(IN)
STRUT LEADING EDGE	57.863	(IN)
STRUT TRAILING EDGE	66.463	(IN)
COMBUSTOR EXIT	66.463	(IN)

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.708	B
1C	44.300	
2A	50.183	D
2C	44.250	E
3A	55.473	
3B	57.658	
4	44.208	

Reading 89

t = 327.27 sec.

2/13/75

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RAMJET PERFORMANCE

S U M M A R Y R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	/A		A/AC	MOMTM	F	ISAL	PHI	ETAC
WIND TUNNEL		1	0 5														
0.000	994.999	2408	495.0(623)	1.3121	28.909	2331											
0.000	0.197	221	-76.2(53)	1.3930	28.908	728	7.340	5346	1.743	0.07087	17.976	0.9904	3027	5.888	168.4		
SPIKE TIP NS		2	0 5														
0.600	11.162	2408	495.0(623)	1.3122	28.908	2331											
0.600	10.161	2355	479.6(608)	1.3140	28.908	2307	0.361	878	2.052	0.07087	17.976	0.9904	3068	1.967	170.7		
WIND TUNNEL		3	0 0														
0.000	994.999	2408	495.0(623)	1.3121	28.909	2331											
0.000	0.161	223	-75.8(53)	1.3931	28.908	731	7.314	5344	1.743	0.07204	18.273	0.9904	3076	5.983	168.3		
SPIKE TIP NS		4	0 0														
0.600	11.162	2408	495.0(623)	1.3122	28.908	2331											
0.600	10.123	2353	479.0(607)	1.3140	28.908	2306	0.388	895	2.052	0.07204	18.273	0.9904	3076	1.002	168.3		
INLET THROAT		5	0 5														
40.400	331.827	2318	469.0(598)	1.3151	28.908	2290											
40.400	10.547	951	101.3(239)	1.3818	28.908	1504	2.853	4290	1.807	0.80956	17.976	0.0789	2610	59.302	145.2		
INLET UPNRSK		6	0 3														
40.400	331.827	2318	469.0(598)	1.3151	28.908	2290											
40.400	9.082	913	91.7(221)	1.3840	28.908	1474	2.948	4345	1.807	0.80869	17.976	0.0868	2630	54.609	146.3		
INLET DNNRSK		7	0 4														
40.400	105.783	2318	469.0(598)	1.3152	28.908	2290											
40.400	91.778	2240	446.8(575)	1.3178	28.908	2253	0.468	1055	1.886	0.80869	17.976	0.0868	2630	13.261	146.3		
COMBUSTOR	0	8	1 5														
40.410	187.486	2451	478.8(676)	1.3111	27.174	2425											
40.410	16.915	1343	153.1(351)	1.3560	27.173	1826	2.210	4037	1.967	0.69429	18.074	0.0789	2610	56.103	144.4	0.17	0.22
COMBUSTOR	0	9	2 4														
40.731	153.911	2614	476.4(724)	1.3036	27.356	2489											
40.731	21.043	1609	176.0(425)	1.3416	27.356	1981	1.957	3877	1.995	0.89759	18.074	0.0786	2602	54.081	143.9	0.17	0.40
COMBUSTOR	0	10	3 21														
41.221	209.466	2282	472.6(627)	1.3165	27.018	2353											
41.221	12.841	1115	135.6(290)	1.3729	27.017	1678	2.447	4106	1.940	0.69082	18.074	0.0792	2567	56.849	142.0	0.17	0.06
COMBUSTOR	0	11	4 21														
41.500	201.476	2227	470.4(611)	1.3210	26.968	2329											
41.500	13.812	1117	150.6(291)	1.3732	26.968	1682	2.379	4000	1.936	0.88195	18.074	0.0800	2530	54.828	140.0	0.17	0.01
COMBUSTOR	0	12	5 4														
42.460	155.998	2381	461.7(655)	1.3136	27.158	2393											
42.460	23.403	1640	241.6(435)	1.3419	27.158	2007	1.653	3318	2.000	0.83219	18.074	0.0848	2373	42.418	131.5	0.17	0.20
COMBUSTOR	0	13	6 8														
42.706	99.627	2222	465.2(631)	1.3220	25.994	2370											
42.706	23.770	1551	260.4(427)	1.3491	25.993	2000	1.600	3201	2.048	0.82542	18.133	0.0858	2326	41.061	128.3	0.28	0.05
COMBUSTOR	0	14	7 2														
42.716	99.332	2220	465.1(631)	1.3220	25.992	2369											
42.716	23.785	1551	260.9(427)	1.3491	25.992	2000	1.598	3196	2.048	0.82467	18.133	0.0858	2324	40.965	128.2	0.28	0.05
COMBUSTOR	0	15	8 3														
42.781	97.655	2206	464.5(627)	1.3226	25.981	2363											
42.781	23.882	1549	264.0(427)	1.3493	25.981	2000	1.584	3167	2.048	0.82111	18.133	0.0862	2312	40.416	127.5	0.28	0.04
COMBUSTOR	0	16	9 3														
44.310	70.950	2136	448.9(605)	1.3254	25.960	2328											
44.310	38.747	1838	357.0(513)	1.3364	25.960	2169	0.989	2144	2.062	0.75938	18.133	0.0932	2133	25.299	117.7	0.28	0.03
COMBUSTOR	0	17	10 21														
44.800	68.793	2084	444.0(589)	1.3276	25.924	2303											
44.800	43.511	1859	374.9(520)	1.3360	25.924	2182	0.852	1861	2.058	0.75038	18.133	0.0943	2100	21.697	115.6	0.28	0.00
COMBUSTOR	0	18	11 21														
45.501	67.897	2057	437.3(581)	1.3287	25.919	2269											
45.501	47.653	1983	383.9(528)	1.3351	25.919	2196	0.745	1635	2.054	0.74560	18.133	0.0949	2061	16.952	114.7	0.28	0.00

REALTAG = 0089 BLOCK = 155 TT/F = 327.273 MACH 7.3 PT = 994.999 TI = 2408.1 PAGE 2

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	B	?/A	W	A/AC	NORTH	C	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 3														
46.216	56.538	2042	430.5(576)	1.3291	25.927	2281											
46.216	38.873	1785	351.8(498)	1.3369	25.927	2141	0.927	1985	2.054	0.72515	18.133	0.0976	2091	22.367	115.3	0.28	0.01
COMBUSTOR	0	20	13 21														
46.250	60.715	2064	448.2(640)	1.3310	23.568	2407											
46.250	38.455	1840	373.1(565)	1.3395	23.568	2280	0.850	1939	2.225	0.72982	18.294	0.0979	2066	21.991	113.0	0.56	0.04
COMBUSTOR	0	21	14 21														
46.260	61.913	1976	448.1(611)	1.3352	23.491	2363											
46.260	38.332	1749	372.6(536)	1.3440	23.491	2231	0.871	1944	2.210	0.72937	18.294	0.0979	2067	22.031	113.0	0.56	0.01
COMBUSTOR	0	22	15 21														
46.941	58.064	1943	441.6(600)	1.3366	23.480	2345											
46.941	29.970	1641	341.4(500)	1.3489	23.480	2165	1.034	2238	2.210	0.69436	18.294	0.1029	2062	24.151	112.7	0.56	0.00
COMBUSTOR	0	23	16 21														
47.310	55.599	1931	438.0(596)	1.3371	23.478	2338											
47.310	27.866	1618	334.5(493)	1.3500	23.478	2151	1.058	2276	2.212	0.67590	18.294	0.1057	2048	23.905	112.0	0.56	0.00
COMBUSTOR	0	24	17 21														
48.110	50.441	1907	430.3(588)	1.3380	23.478	2325											
48.110	23.902	1575	320.5(479)	1.3521	23.478	2124	1.104	2344	2.216	0.62132	18.294	0.1150	2036	22.630	111.3	0.56	0.00
COMBUSTOR	0	25	18 21														
48.741	23.995	2357	424.3(735)	1.3165	23.895	2541											
48.741	7.225	1753	220.4(531)	1.3393	23.895	2210	1.445	3194	2.337	0.56555	18.294	0.1263	2050	28.072	112.0	0.56	0.17
COMBUSTOR	0	26	19 21														
50.181	32.650	1954	426.7(645)	1.3372	21.981	2431											
50.181	11.383	1490	263.5(482)	1.3573	21.981	2139	1.336	2858	2.385	0.46340	18.421	0.1592	2089	20.579	113.4	0.79	0.04
COMBUSTOR	0	27	20 21														
50.191	35.295	1833	426.7(603)	1.3432	21.884	2365											
50.191	11.411	1365	263.7(441)	1.3646	21.884	2057	1.388	2855	2.358	0.46280	18.421	0.1554	2089	20.537	113.4	0.79	0.01
COMBUSTOR	0	28	21 21														
50.721	36.722	1806	423.4(594)	1.3444	21.870	2350											
50.721	12.942	1375	273.4(444)	1.3643	21.870	2065	1.326	2739	2.349	0.43283	18.421	0.1662	2119	18.423	115.0	0.79	0.00
COMBUSTOR	0	29	22 21														
52.131	36.298	1781	415.4(585)	1.3455	21.867	2334											
52.131	11.112	1305	250.6(420)	1.3679	21.867	2014	1.426	2872	2.345	0.36889	18.421	0.1950	2199	16.463	119.4	0.79	0.00
COMBUSTOR	0	30	23 4														
54.231	32.835	1878	403.1(620)	1.3403	21.900	2390											
54.231	9.925	1376	227.7(440)	1.3632	21.900	2063	1.436	2962	2.377	0.30292	18.456	0.2379	2304	13.946	124.8	0.80	0.04
COMBUSTOR	0	31	24 3														
54.731	32.240	1898	400.7(627)	1.3393	21.922	2401											
54.731	9.300	1374	217.7(444)	1.3630	21.922	2061	1.468	3026	2.382	0.29054	18.456	0.2480	2327	13.663	126.1	0.80	0.04
COMBUSTOR	0	32	25 4														
55.481	30.747	1956	397.0(646)	1.3363	21.977	2432											
55.481	8.992	1422	209.9(459)	1.3599	21.977	2092	1.463	3060	2.395	0.27388	18.456	0.2631	2358	13.023	127.8	0.80	0.06
COMBUSTOR	0	33	26 3														
55.760	30.248	1976	395.7(653)	1.3353	21.997	2442											
55.760	8.823	1439	206.9(465)	1.3589	21.997	2102	1.462	3073	2.399	0.26820	18.456	0.2687	2370	12.808	128.4	0.80	0.07
COMBUSTOR	0	34	27 4														
56.241	25.999	2076	393.4(688)	1.3304	22.083	2490											
56.241	6.579	1461	176.5(471)	1.3568	22.083	2112	1.560	3294	2.427	0.21188	18.456	0.3401	2462	10.847	133.4	0.80	0.10
COMBUSTOR	0	35	28 5														
57.666	21.366	2498	386.8(836)	1.3103	22.458	2692											
57.666	11.425	2149	258.3(708)	1.3227	22.458	2509	1.011	2536	2.495	0.19591	18.456	0.3678	2531	7.720	137.1	0.80	0.22
COMBUSTOR	0	36	29 3														
57.721	21.322	2505	386.6(838)	1.3099	22.464	2695											
57.721	11.742	2170	263.4(715)	1.3218	22.464	2520	0.985	2483	2.496	0.19525	18.456	0.3691	2534	7.533	137.3	0.80	0.23
COMBUSTOR	0	37	30 3														
57.861	21.244	2519	385.9(843)	1.3093	22.478	2701											
57.861	11.881	2191	265.1(723)	1.3209	22.478	2530	0.972	2459	2.498	0.19392	18.456	0.3716	2541	7.410	137.7	0.80	0.23

ORIGINAL PAGE IS OF POOR QUALITY

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                  P      T      H              GAMMA  MOLWT  SONV  MACH  VEL   S     W/A     W      A/AC      [illegible]  C     IVAC  RHI  ETAC
COMBUSTOR         0     38     31   3
57.941       21.516   2528   385.5( 846) 1.3068 22.467 2705
57.941       11.970   2197   263.3( 725) 1.3215 22.467 2533 0.977 2473 2.498 0.19609 18.456 0.3675   2545  7.537 137.9 0.80 0.23
COMBUSTOR         0     39     32   3
58.221       21.609   2551   384.2( 854) 1.3077 22.511 2715
58.221       12.525   2240   269.0( 740) 1.3187 22.511 2554 0.940 2401 2.500 0.19554 18.456 0.3685   2559  7.296 138.7 0.80 0.24
COMBUSTOR         0     40     33   3
58.447       21.689   2565   383.0( 859) 1.3070 22.525 2720
58.447       12.953   2269   273.2( 750) 1.3174 22.526 2569 0.912 2344 2.500 0.19504 18.456 0.3695   2570  7.104 139.3 0.80 0.25
COMBUSTOR         0     41     34   3
59.171       21.868   2570   379.3( 861) 1.3067 22.538 2722
59.171       14.325   2324   288.1( 770) 1.3153 22.538 2597 0.823 2136 2.500 0.19201 18.456 0.3753   2602  6.374 141.0 0.80 0.25
COMBUSTOR         0     42     35   4
60.191       22.513   2454   374.1( 819) 1.3119 22.448 2670
60.191       16.400   2274   307.8( 753) 1.3183 22.448 2577 0.707 1821 2.484 0.19079 18.456 0.3777   2631  5.400 142.6 0.80 0.22
COMBUSTOR         0     43     36   4
62.201       23.427   2360   364.0( 787) 1.3158 22.395 2628
62.201       17.550   2205   305.4( 729) 1.3215 22.395 2543 0.673 1712 2.470 0.19743 18.456 0.3650   2622  5.251 142.1 0.80 0.20
COMBUSTOR         0     44     37   4
63.621       23.072   2631   357.3( 882) 1.3031 22.645 2744
63.621       14.587   2362   256.9( 782) 1.3125 22.646 2609 0.859 2241 2.498 0.20278 18.456 0.3553   2613  7.062 141.6 0.80 0.26
COMBUSTOR         0     45     38   3
66.085       21.545   2643   345.9( 885) 1.3022 22.683 2746
66.085       12.361   2319   225.4( 765) 1.3136 22.683 2584 0.951 2456 2.504 0.19221 18.456 0.3749   2596  7.337 140.7 0.80 0.30
COMBUSTOR         0     46     39   4
66.461       21.642   2436   344.2( 812) 1.3118 22.503 2657
66.461        6.891   1842   129.2( 597) 1.3342 22.503 2330 1.408 3280 2.482 0.17869 18.456 0.4032   2593  9.108 140.5 0.80 0.24
COMBUSTOR    REGEN     47     40   4
66.461       21.642   2768   469.5( 936) 1.3003 22.503 2820
66.461        8.493   2218   264.2( 732) 1.3195 22.503 2543 1.260 3205 2.531 0.17869 18.456 0.4032   2716  8.901 147.1 0.80 0.24
NOZZLE  AE             48     41   5
88.697       21.642   2436   344.2( 810) 1.3118 22.503 2657
88.697        0.439    888  -190.9( 277) 1.3822 22.503 1647 3.141 5174 2.482 0.03720 18.456 1.9371   3186  2.991 172.6 0.80 0.24
NOZZLE  PO             49     42   5
88.697       21.642   2436   344.2( 810) 1.3118 22.503 2657
88.697        0.157    667  -261.0( 207) 1.3910 22.503 1432 3.844 5503 2.482 0.01685 18.456 3.8219   3310  1.612 179.4 0.80 0.24
NOZZLE  AE REGEN       50     43   5
88.697       21.642   2768   469.5( 936) 1.3003 22.503 2820
88.697        0.497   1068  -133.2( 335) 1.3734 22.503 1800 3.651 5491 2.531 0.03720 18.456 1.9371   3396  3.174 184.0 0.80 0.24
NOZZLE  PO REGEN       51     44   5
88.697       21.642   2768   469.5( 936) 1.3003 22.503 2820
88.697        0.157    777  -226.3( 242) 1.3871 22.503 1543 3.824 5900 2.531 0.01735 18.456 4.1532   3552  1.591 192.4 0.80 0.24
FICTIVE COMBUSTR       69     62   0
66.461      331.827   4810   344.2(1686) 1.1967 24.959 3386
66.461        0.157    891-1159.6( 259) 1.3613 25.116 1550 5.597 8675 2.388 0.02482 18.456 2.9037   5093  3.345 275.9 0.80 1.00
FICTIVE NOZZLE         70     63   0
88.697       75.306   2365   317.9( 786) 1.3143 22.503 2621
88.697        0.229    504  -311.9( 156) 1.3951 22.503 1247 4.504 5614 2.361 0.03720 18.456 1.9371   3334  3.245 180.7 0.80 0.24
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XABS	P-IB	P-OB	PDA	DOX	C-IB	C-OB	CAWALL	P-TH/PSO	P-IP/PTO	P-OB/PSO	P-CB/PTO
6.581E-01	6.900E-01	0.000	-2.693E-01	0.000	0.000	0.000	2.470E-02	4.398E 00	6.935E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.295E 01	0.000	0.000	0.000	1.634E 02	4.398E 00	6.935E-04	0.000	0.000
3.070E 01	1.135E 00	0.000	-9.694E 01	0.000	0.000	0.000	5.055E 02	7.234E 00	1.141E-03	0.000	0.000
3.508E 01	1.998E 00	0.000	-1.989E 02	0.000	0.000	0.000	6.804E 02	1.274E 01	2.008E-03	0.000	0.000
3.555E 01	2.150E 00	0.000	-2.174E 02	0.000	0.000	0.000	7.013E 02	1.370E 01	2.161E-03	0.000	0.000
3.606E 01	2.110E 00	0.000	-2.390E 02	-2.115E 02	-2.115E 02	0.000	7.246E 02	1.349E 01	2.121E-03	0.000	0.000
3.648E 01	2.283E 00	0.000	-2.578E 02	-2.167E 02	-2.167E 02	0.000	7.443E 02	1.455E 01	2.295E-03	0.000	0.000
3.660E 01	2.295E 00	3.034E 00	-2.949E 02	-2.182E 02	-2.182E 02	0.000	7.499E 02	1.463E 01	2.306E-03	1.934E 01	3.050E-03
3.660E 01	2.295E 00	3.055E 00	-2.949E 02	-2.182E 02	-2.182E 02	0.000	7.502E 02	1.463E 01	2.307E-03	1.947E 01	3.070E-03
3.701E 01	2.335E 00	4.420E 00	-2.970E 02	-2.235E 02	-2.235E 02	0.000	7.922E 02	1.488E 01	2.347E-03	2.817E 01	4.442E-03
3.727E 01	2.249E 00	5.300E 00	-2.959E 02	-2.269E 02	-2.269E 02	0.000	8.196E 02	1.434E 01	2.261E-03	3.378E 01	5.327E-03
3.803E 01	2.000E 00	8.267E 00	-2.780E 02	-2.377E 02	-2.377E 02	0.000	9.012E 02	1.275E 01	2.010E-03	5.269E 01	8.308E-03
3.873E 01	6.621E 00	1.101E 01	-2.773E 02	-2.927E 02	-2.559E 02	-3.685E 01	9.744E 02	4.220E 01	6.654E-03	7.015E 01	1.106E-02
3.875E 01	6.746E 00	1.100E 01	-2.776E 02	-2.941E 02	-2.566E 02	-3.750E 01	9.815E 02	4.300E 01	6.780E-03	7.008E 01	1.105E-02
3.901E 01	8.460E 00	1.085E 01	-2.827E 02	-3.139E 02	-2.676E 02	-4.635E 01	1.011E 03	5.392E 01	8.503E-03	6.914E 01	1.090E-02
3.950E 01	1.180E 01	1.057E 01	-2.989E 02	-3.586E 02	-2.957E 02	-6.294E 01	1.067E 03	7.524E 01	1.186E-02	6.736E 01	1.062E-02
3.975E 01	1.361E 01	1.042E 01	-3.086E 02	-3.895E 02	-3.141E 02	-7.139E 01	1.096E 03	8.676E 01	1.368E-02	6.645E 01	1.048E-02
4.000E 01	1.541E 01	1.129E 01	-3.173E 02	-4.150E 02	-3.353E 02	-7.975E 01	1.129E 03	9.820E 01	1.548E-02	7.198E 01	1.135E-02
4.022E 01	1.691E 01	1.206E 01	-3.263E 02	-4.430E 02	-3.558E 02	-8.715E 01	1.151E 03	1.078E 02	1.699E-02	7.688E 01	1.212E-02
4.040E 01	1.812E 01	1.545E 01	-3.317E 02	-4.662E 02	-3.731E 02	-9.313E 01	1.171E 03	1.155E 02	1.821E-02	9.849E 01	1.553E-02
4.041E 01	1.819E 01	1.564E 01	-3.318E 02	-4.675E 02	-3.740E 02	-9.346E 01	1.173E 03	1.159E 02	1.828E-02	9.970E 01	1.572E-02
4.073E 01	2.037E 01	2.172E 01	-3.344E 02	-5.102E 02	-4.061E 02	-1.001E 02	1.210E 03	1.298E 02	2.047E-02	1.384E 02	2.183E-02
4.122E 01	2.369E 01	1.987E 00	-3.606E 02	-5.784E 02	-4.583E 02	-1.201E 02	1.268E 03	1.510E 02	2.381E-02	1.267E 01	1.997E-03
4.150E 01	2.559E 01	2.037E 00	-3.932E 02	-6.190E 02	-4.899E 02	-1.290E 02	1.301E 03	1.631E 02	2.572E-02	1.298E 01	2.047E-03
4.246E 01	4.460E 01	2.206E 00	-5.373E 02	-7.774E 02	-6.016E 02	-1.757E 02	1.415E 03	2.843E 02	4.482E-02	1.406E 01	2.217E-03
4.271E 01	4.529E 01	2.249E 00	-5.801E 02	-8.225E 02	-6.296E 02	-1.929E 02	1.444E 03	2.887E 02	4.552E-02	1.434E 01	2.261E-03
4.272E 01	4.532E 01	2.251E 00	-5.817E 02	-8.243E 02	-6.307E 02	-1.936E 02	1.449E 03	2.889E 02	4.559E-02	1.435E 01	2.262E-03
4.278E 01	4.550E 01	2.262E 00	-5.929E 02	-8.363E 02	-6.378E 02	-1.985E 02	1.453E 03	2.900E 02	4.573E-02	1.442E 01	2.274E-03
4.431E 01	4.980E 01	2.770E 01	-7.549E 02	-1.119E 03	-7.784E 02	-3.402E 02	1.637E 03	3.174E 02	5.005E-02	1.765E 02	2.784E-02
4.480E 01	5.117E 01	3.585E 01	-7.836E 02	-1.206E 03	-8.125E 02	-3.938E 02	1.697E 03	3.262E 02	5.143E-02	2.285E 02	3.603E-02
4.550E 01	4.780E 01	4.751E 01	-7.977E 02	-1.328E 03	-8.572E 02	-4.706E 02	1.783E 03	3.047E 02	4.804E-02	3.028E 02	4.774E-02
4.622E 01	4.436E 01	3.339E 01	-7.820E 02	-1.452E 03	-9.020E 02	-5.501E 02	1.870E 03	2.827E 02	4.458E-02	2.128E 02	3.356E-02
4.625E 01	4.419E 01	3.272E 01	-7.811E 02	-1.458E 03	-9.042E 02	-5.539E 02	1.874E 03	2.817E 02	4.441E-02	2.085E 02	3.288E-02
4.626E 01	4.414E 01	3.252E 01	-7.808E 02	-1.460E 03	-9.048E 02	-5.550E 02	1.875E 03	2.814E 02	4.437E-02	2.073E 02	3.268E-02
4.694E 01	4.086E 01	1.907E 01	-7.793E 02	-1.579E 03	-9.469E 02	-6.325E 02	1.959E 03	2.605E 02	4.107E-02	1.216E 02	1.917E-02
4.731E 01	3.909E 01	1.665E 01	-7.900E 02	-1.645E 03	-9.695E 02	-6.751E 02	2.005E 03	2.491E 02	3.928E-02	1.061E 02	1.673E-02
4.811E 01	3.642E 01	1.138E 01	-7.950E 02	-1.786E 03	-1.018E 03	-7.675E 02	2.104E 03	2.322E 02	3.661E-02	7.253E 01	1.144E-02
4.874E 01	7.225E 00	7.225E 00	-7.757E 02	-1.896E 03	-1.056E 03	-8.407E 02	2.183E 03	4.605E 01	7.261E-03	4.605E 01	7.261E-03
5.018E 01	1.138E 01	1.138E 01	-7.066E 02	-2.113E 03	-1.140E 03	-9.726E 02	2.363E 03	7.255E 01	1.144E-02	7.255E 01	1.144E-02
5.019E 01	1.141E 01	1.141E 01	-7.060E 02	-2.114E 03	-1.141E 03	-9.732E 02	2.364E 03	7.273E 01	1.147E-02	7.273E 01	1.147E-02
5.072E 01	1.294E 01	1.294E 01	-6.724E 02	-2.175E 03	-1.171E 03	-1.004E 03	2.430E 03	8.249E 01	1.301E-02	8.249E 01	1.301E-02
5.213E 01	1.111E 01	1.111E 01	-5.835E 02	-2.321E 03	-1.250E 03	-1.071E 03	2.608E 03	7.083E 01	1.117E-02	7.083E 01	1.117E-02
5.423E 01	9.925E 00	9.925E 00	-4.677E 02	-2.521E 03	-1.364E 03	-1.157E 03	2.874E 03	6.326E 01	9.975E-03	6.326E 01	9.975E-03
5.473E 01	9.300E 00	9.300E 00	-4.427E 02	-2.566E 03	-1.391E 03	-1.175E 03	2.938E 03	5.928E 01	9.347E-03	5.928E 01	9.347E-03
5.548E 01	8.952E 00	8.952E 00	-4.074E 02	-2.633E 03	-1.430E 03	-1.203E 03	3.034E 03	5.706E 01	8.997E-03	5.706E 01	8.997E-03
5.576E 01	8.823E 00	8.823E 00	-3.947E 02	-2.658E 03	-1.444E 03	-1.214E 03	3.069E 03	5.624E 01	8.867E-03	5.624E 01	8.867E-03
5.624E 01	4.550E 00	8.600E 00	-3.011E 02	-2.700E 03	-1.466E 03	-1.234E 03	3.102E 03	2.900E 01	4.573E-03	5.482E 01	8.643E-03
5.767E 01	1.142E 01	1.142E 01	-2.298E 02	-2.821E 03	-1.524E 03	-1.297E 03	3.209E 03	7.282E 01	1.148E-02	7.282E 01	1.148E-02
5.772E 01	1.195E 01	1.153E 01	-2.266E 02	-2.826E 03	-1.526E 03	-1.300E 03	3.217E 03	7.617E 01	1.201E-02	7.352E 01	1.159E-02
5.786E 01	1.195E 01	1.181E 01	-2.190E 02	-2.838E 03	-1.531E 03	-1.307E 03	3.234E 03	7.617E 01	1.201E-02	7.528E 01	1.187E-02
5.794E 01	1.197E 01	1.197E 01	-2.142E 02	-2.845E 03	-1.534E 03	-1.311E 03	3.245E 03	7.629E 01	1.203E-02	7.629E 01	1.203E-02
5.822E 01	1.252E 01	1.252E 01	-1.982E 02	-2.870E 03	-1.545E 03	-1.325E 03	3.280E 03	7.983E 01	1.259E-02	7.983E 01	1.259E-02
5.845E 01	1.295E 01	1.295E 01	-1.858E 02	-2.891E 03	-1.554E 03	-1.337E 03	3.309E 03	8.256E 01	1.302E-02	8.256E 01	1.302E-02
5.917E 01	1.432E 01	1.432E 01	-1.488E 02	-2.959E 03	-1.581E 03	-1.378E 03	3.402E 03	9.131E 01	1.440E-02	9.131E 01	1.440E-02
6.019E 01	1.640E 01	1.640E 01	-1.132E 02	-3.056E 03	-1.618E 03	-1.438E 03	3.532E 03	1.045E 02	1.648E-02	1.045E 02	1.648E-02
6.220E 01	1.755E 01	1.755E 01	-1.093E 02	-3.242E 03	-1.686E 03	-1.556E 03	3.790E 03	1.119E 02	1.764E-02	1.119E 02	1.764E-02

READING = 0089 BLOCK = 155 TIME = 327.273 MACH 7.3 PT = 404.999 TT = 2404.1

XABS	P-IR	P-CH	PPA	PPX	C-IR	C-CH	CP-ALT	P-IT/PS	C-IR/PIO	P-CH/P90	P-CH/PIO
6.362E 01	1.454E 01	1.459E 01	-1.093E 02	-3.366E 03	-1.739E 03	-1.632E 03	4.272E 03	9.256E 01	1.666E-02	9.296E 01	1.466E-02
6.698E 01	1.236E 01	1.236E 01	-1.093E 02	-3.576E 03	-1.823E 03	-1.753E 03	4.289E 03	7.679E 01	1.292E-02	7.679E 01	1.242E-02
6.644E 01	1.760E 00	1.202E 01	-1.093E 02	-3.606E 03	-1.837E 03	-1.771E 03	4.337E 03	1.122E 01	1.769E-03	7.663E 01	1.208E-02
6.650E 01	1.760E 00	1.199E 01	-1.093E 02	-3.611E 03	-1.838E 03	-1.773E 03	4.342E 03	1.122E 01	1.769E-03	7.639E 01	1.205E-02
6.670E 01	2.152E 00	1.180E 01	-1.093E 02	-3.628E 03	-1.846E 03	-1.782E 03	4.368E 03	1.372E 01	2.163E-03	7.520E 01	1.186E-02
6.836E 01	5.405E 00	7.933E 00	-2.562E 01	-3.736E 03	-1.895E 03	-1.843E 03	4.584E 03	3.445E 01	5.432E-03	5.056E 01	7.973E-03
6.980E 01	2.559E 00	4.574E 00	2.154E 02	-3.809E 03	-1.922E 03	-1.887E 03	4.761E 03	1.625E 01	2.563E-03	2.916E 01	4.597E-03
7.052E 01	1.933E 00	2.895E 00	2.909E 02	-3.843E 03	-1.932E 03	-1.911E 03	4.449E 03	1.232E 01	1.943E-03	1.845E 01	2.910E-03
7.113E 01	1.410E 00	2.043E 00	3.380E 02	-3.872E 03	-1.940E 03	-1.932E 03	4.923E 03	8.987E 00	1.417E-03	1.685E 01	2.656E-03
7.251E 01	1.235E 00	2.072E 00	4.200E 02	-3.927E 03	-1.955E 03	-1.972E 03	5.089E 03	7.872E 00	1.241E-03	1.321E 01	2.083E-03
7.404E 01	7.068E-01	1.440E 00	4.828E 02	-3.973E 03	-1.968E 03	-2.005E 03	5.273E 03	4.505E 00	7.103E-04	9.178E 00	1.447E-03
7.419E 01	6.550E-01	1.269E 00	4.870E 02	-3.977E 03	-1.970E 03	-2.007E 03	5.291E 03	4.175E 00	6.583E-04	8.089E 00	1.276E-03
7.494E 01	7.668E-01	4.156E-01	5.140E 02	-3.996E 03	-1.975E 03	-2.023E 03	5.375E 03	4.887E 00	7.706E-04	2.645E 00	4.171E-04
7.494E 01	7.674E-01	4.104E-01	5.148E 02	-3.999E 03	-1.975E 03	-2.023E 03	5.375E 03	4.891E 00	7.712E-04	2.616E 00	4.125E-04
7.627E 01	9.650E-01	0.000	5.331E 02	-4.040E 03	-1.983E 03	-2.057E 03	5.427E 03	6.151E 00	9.698E-04	0.000	0.000
7.912E 01	1.155E 00	0.000	5.755E 02	-4.054E 03	-1.997E 03	-2.057E 03	5.525E 03	7.362E 00	1.161E-03	0.000	0.000
8.302E 01	7.400E-01	0.000	6.160E 02	-4.066E 03	-2.009E 03	-2.057E 03	5.630E 03	4.717E 00	7.437E-04	0.000	0.000
8.583E 01	8.200E-01	0.000	6.333E 02	-4.076E 03	-2.019E 03	-2.057E 03	5.685E 03	5.227E 00	8.241E-04	0.000	0.000
8.869E 01	1.065E 00	0.000	6.560E 02	-4.093E 03	-2.036E 03	-2.057E 03	5.707E 03	6.788E 00	1.070E-03	0.000	0.000
8.870E 01	1.066E 00	0.000	6.560E 02	-4.093E 03	-2.036E 03	-2.057E 03	5.707E 03	6.791E 00	1.071E-03	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.556E 01	8.556E 01	2.021E-03	3.570E-02
4.041E 01	1.587E-01	8.571E 01	2.767E-03	5.566E-02
4.073E 01	5.305E 00	9.102E 01	2.459E-03	5.610E-02
4.122E 01	8.126E 00	9.914E 01	2.628E-03	3.796E-02
4.150E 01	4.563E 00	1.037E 02	2.334E-03	4.281E-02
4.246E 01	1.369E 01	1.174E 02	2.579E-03	5.541E-02
4.271E 01	3.446E 00	1.208E 02	3.000E-03	4.977E-02
4.272E 01	1.375E-01	1.210E 02	2.720E-03	5.402E-02
4.278E 01	8.644E-01	1.219E 02	2.733E-03	5.415E-02
4.431E 01	1.743E 01	1.393E 02	3.024E-03	5.677E-02
4.480E 01	4.280E 00	1.436E 02	3.095E-03	5.568E-02
4.550E 01	5.014E 00	1.490E 02	3.133E-03	5.445E-02
4.622E 01	5.563E 00	1.545E 02	3.016E-03	5.461E-02
4.625E 01	2.975E-01	1.548E 02	3.460E-03	4.759E-02
4.626E 01	9.038E-02	1.549E 02	3.128E-03	5.407E-02
4.694E 01	5.929E 00	1.609E 02	2.997E-03	5.101E-02
4.731E 01	3.281E 00	1.641E 02	2.982E-03	4.888E-02
4.811E 01	6.854E 00	1.710E 02	2.961E-03	4.393E-02
4.874E 01	5.864E 00	1.749E 02	2.932E-03	2.191E-02
5.018E 01	1.424E 01	1.911E 02	3.574E-03	2.274E-02
5.019E 01	8.461E-02	1.912E 02	3.005E-03	2.749E-02
5.072E 01	3.807E 00	1.950E 02	2.874E-03	3.018E-02
5.213E 01	8.714E 00	2.037E 02	2.753E-03	2.746E-02
5.423E 01	1.096E 01	2.147E 02	2.659E-03	2.511E-02
5.473E 01	2.368E 00	2.170E 02	2.724E-03	2.334E-02
5.548E 01	3.474E 00	2.205E 02	2.710E-03	2.251E-02
5.576E 01	1.261E 00	2.218E 02	2.757E-03	2.181E-02
5.624E 01	1.038E 00	2.228E 02	2.652E-03	1.744E-02
5.767E 01	2.762E 00	2.256E 02	2.873E-03	2.071E-02
5.772E 01	1.618E-01	2.257E 02	3.151E-03	1.872E-02
5.786E 01	4.186E-01	2.261E 02	3.155E-03	1.870E-02
5.794E 01	2.412E-01	2.264E 02	3.152E-03	1.864E-02
5.822E 01	8.345E-01	2.272E 02	3.197E-03	1.899E-02
5.849E 01	6.571E-01	2.279E 02	3.173E-03	1.899E-02
5.917E 01	1.990E 00	2.299E 02	3.204E-03	1.893E-02
6.019E 01	2.489E 00	2.323E 02	3.265E-03	1.839E-02
6.220E 01	4.453E 00	2.368E 02	3.219E-03	1.893E-02
6.362E 01	3.507E 00	2.403E 02	3.035E-03	2.090E-02
6.608E 01	7.037E 00	2.473E 02	3.148E-03	1.870E-02
6.646E 01	1.233E 00	2.486E 02	3.068E-03	1.482E-02
6.650E 01	1.402E-01	2.487E 02	2.926E-03	1.541E-02
6.670E 01	6.844E-01	2.494E 02	2.931E-03	1.553E-02
6.836E 01	5.754E 00	2.552E 02	2.922E-03	1.518E-02
6.980E 01	4.354E 00	2.595E 02	2.782E-03	1.057E-02
7.052E 01	1.833E 00	2.613E 02	2.701E-03	8.188E-03
7.113E 01	1.358E 00	2.627E 02	2.667E-03	7.270E-03
7.251E 01	2.776E 00	2.659E 02	2.628E-03	6.313E-03
7.404E 01	2.599E 00	2.681E 02	2.549E-03	4.655E-03
7.419E 01	2.077E-01	2.683E 02	2.529E-03	4.305E-03
7.494E 01	8.567E-01	2.691E 02	2.442E-03	3.027E-03
7.494E 01	1.400E-03	2.691E 02	2.442E-03	3.020E-03
7.627E 01	9.248E-01	2.697E 02	2.520E-03	4.296E-03
7.912E 01	1.203E 00	2.709E 02	2.549E-03	4.856E-03
8.302E 01	1.187E 00	2.721E 02	2.446E-03	3.507E-03
8.583E 01	5.913E-01	2.726E 02	2.452E-03	3.756E-03
8.869E 01	2.548E-01	2.729E 02	2.487E-03	4.506E-03

ORIGINAL PAGE IS
OF POOR QUALITY

READING = 0089 BLOCK = 155 TIME = 327.273 MACH 7.3 PT = 994.999 TT = 2008.1

X	DDRAG	CDRAG	CF	HC
8.870E 01	0.000	2.729E 02	2.687E-03	4.508E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	307.	(LBF)
MEASURED THRUST	1300.	(LBF)
CALCULATED SPECIFIC IMPULSE	679.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2876.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.2036	
MEASURED THRUST COEFFICIENT	0.4620	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3555.	(LBF)
NET THRUST	527.	(LBF)
SPECIFIC IMPULSE	1167.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.3497	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.6	(LBF)
INLET MOMENTUM CHANGE	-417.3	(LBF)
COMBUSTOR FRICTION DRAG	163.0	(LBF)
COMBUSTOR STRUT DRAG	35.25	(LBF)
COMBUSTOR MOMENTUM CHANGE	-17.	(LBF)
NOZZLE FRICTION DRAG	24.29	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	741.	(LBF)
NOZZLE PRESSURE INTEGRAL	765.	(LBF)
EXTERNAL FRICTION DRAG	69.53	(LBF)
EXTERNAL PRESSURE INTEGRAL	-677.	(LBF)
TOTAL EXTERNAL DRAG	-747.	(LBF)
TOTAL STRUT DRAG	35.25	(LBF)
CAVITY FORCE	-806.	(LBF)
CALCULATED LOAD CELL FORCE	-1245.	(LBF)
MEASURED LOAD CELL FORCE	-252.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0, -155.3, -125.4,	

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9904	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1049	
DELTA PT2	0.0953	(PSI)
TOTAL PRESSURE RECOVERY = SUPERSONIC	0.3335	
TOTAL PRESSURE RECOVERY = SUBSONIC	0.1063	
INLET PROCESS EFFICIENCY = SUPERSONIC	0.9078	
INLET PROCESS EFFICIENCY = SUBSONIC	0.9175	
KINETIC ENERGY EFFICIENCY = SUPERSONIC	0.9260	
KINETIC ENERGY EFFICIENCY = SUBSONIC	0.8790	
ENTHALPY AT PO = SUPERSONIC	-59.83	(BTU/LBM)
ENTHALPY AT PO = SUBSONIC	-33.02	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0251
EQUIVALENCE RATIO	0.798
COMBUSTOR EFFICIENCY	0.239
TOTAL PRESSURE RATIO	0.0652
COMBUSTOR EFFECTIVENESS	0.2810
INJECTOR DISCHARGE COEFFICIENTS	0.9444, 0.4501, 1.0001, 0.8069

NOZZLE

VACUUM STREAM THRUST COEFFICIENT = CS	1.0466
NOZZLE COEFFICIENT = CT	0.9837
PROCESS EFFICIENCY	1.2033
KINETIC ENERGY EFFICIENCY	1.0829

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7210	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.605	(IN)
NOZZLE SHROUD TRAILING EDGE	74.945	(IN)
NOZZLE PLUG TRAILING EDGE	88.697	(IN)
STRUT LEADING EDGE	57.861	(IN)
STRUT TRAILING EDGE	66.461	(IN)
COMBUSTOR EXIT	64.461	(IN)

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.706	B
1C	44.300	
2A	50.181	C
2C	46.250	E
3A	55.471	
3B	57.656	
0	64.206	

READING = 0089 BLOCK = 183 TIME = 352.473 MACH 7.2 PT = 994.749 TT = 3296.5 PAGE 1

2-13-75

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	A*/A	A	A/AC	MOMTM	Q	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6														
0.000	994.749	3296	761.1(883)	1.2842	28.909	2698											
0.000	0.153	323	-51.4(78)	1.3972	28.908	882	7.232	6376	1.837	0.05629	14.261	0.9892	2865	5.577	200.9		
SPIKE TIP NS		2	0 6														
0.600	11.362	3295	761.1(883)	1.2831	28.907	2697											
0.600	10.528	3240	743.9(867)	1.2850	28.907	2676	0.346	926	2.144	0.05629	14.261	0.9892	3078	0.610	215.8		
WIND TUNNEL		3	0 0														
0.000	994.749	3296	761.1(883)	1.2842	28.909	2698											
0.000	0.172	335	-48.7(80)	1.3975	28.908	897	7.095	6365	1.837	0.06130	15.531	0.9892	3116	6.064	200.7		
SPIKE TIP NS		4	0 0														
0.600	11.362	3295	761.1(883)	1.2831	28.907	2697											
0.600	10.353	3228	740.2(863)	1.2854	28.907	2672	0.382	1022	2.144	0.06130	15.531	0.9892	3116	0.973	200.7		
INLET THROAT		5	0 3														
40.400	300.721	3185	726.6(850)	1.2875	28.909	2656											
40.400	10.599	1415	219.8(349)	1.3533	28.908	1815	2.775	5035	1.908	0.70569	14.261	0.0789	2446	55.224	171.5		
INLET UPNRSK		6	0 3														
40.400	300.721	3185	726.6(850)	1.2875	28.909	2656											
40.400	9.143	1361	205.7(335)	1.3565	28.908	1762	2.865	5105	1.908	0.64154	14.261	0.0868	2466	50.697	172.9		
INLET DNNRSK		7	0 4														
40.400	99.424	3185	726.6(850)	1.2875	28.908	2655											
40.400	86.545	3087	696.7(821)	1.2905	28.908	2618	0.467	1223	1.985	0.64154	14.261	0.0868	2466	12.196	172.9		
COMBUSTOR	0	8	1 13														
40.410	231.610	3077	737.4(884)	1.2934	26.654	2725											
40.410	12.746	1519	256.6(407)	1.3501	26.654	1956	2.508	4905	2.047	0.71018	14.353	0.0789	2446	54.133	170.4	0.21	0.03
COMBUSTOR	0	9	2 4														
40.731	173.543	3300	734.6(951)	1.2827	26.908	2797											
40.731	16.502	1897	291.8(516)	1.3304	26.909	2160	2.179	4707	2.086	0.71280	14.353	0.0786	2432	52.141	169.4	0.21	0.25
COMBUSTOR	0	10	3 21														
41.221	193.358	3061	730.2(878)	1.2938	26.660	2718											
41.221	12.399	1570	269.8(422)	1.3474	26.660	1986	2.416	4800	2.059	0.70742	14.353	0.0792	2393	52.767	166.7	0.21	0.04
COMBUSTOR	0	11	4 21														
41.500	178.089	3019	727.6(865)	1.2957	26.624	2703											
41.500	13.783	1621	295.7(437)	1.3452	26.623	2018	2.304	4649	2.061	0.70038	14.353	0.0800	2357	50.603	164.2	0.21	0.01
COMBUSTOR	0	12	5 4														
42.460	108.272	3073	716.7(881)	1.2925	26.718	2719											
42.460	19.453	2047	393.3(562)	1.3268	26.718	2248	1.789	4022	2.102	0.66087	14.353	0.0848	2217	41.309	154.4	0.21	0.09
COMBUSTOR	0	13	6 21														
42.706	93.572	2950	722.3(890)	1.2990	25.195	2750											
42.706	20.249	2045	423.4(594)	1.3295	25.195	2316	1.669	3867	2.197	0.65656	14.424	0.0858	2178	39.455	151.0	0.36	0.04
COMBUSTOR	0	14	7 21														
42.716	96.617	2890	722.1(871)	1.3019	25.136	2728											
42.716	20.281	1964	424.2(575)	1.3324	25.136	2287	1.689	3861	2.188	0.65596	14.424	0.0858	2177	39.359	150.9	0.36	0.01
COMBUSTOR	0	15	8 21														
42.781	94.812	2879	721.2(867)	1.3024	25.127	2724											
42.781	20.492	1990	428.9(577)	1.3323	25.127	2290	1.670	3824	2.188	0.65313	14.424	0.0862	2167	38.811	150.2	0.36	0.00
COMBUSTOR	0	16	9 4														
44.310	67.294	2904	695.1(874)	1.3000	25.229	2728											
44.310	38.388	2546	574.6(755)	1.3118	25.229	2565	0.956	2454	2.216	0.60403	14.424	0.0932	2017	23.033	139.8	0.36	0.06
COMBUSTOR	0	17	10 21														
44.800	65.908	2787	685.4(836)	1.3051	25.141	2682											
44.800	44.123	2535	601.1(753)	1.3133	25.141	2566	0.801	2055	2.206	0.59687	14.424	0.0945	1987	19.061	137.8	0.36	0.01
COMBUSTOR	0	18	11 21														
45.501	65.445	2733	671.7(818)	1.3070	25.128	2659											
45.501	47.931	2539	606.6(754)	1.3133	25.128	2569	0.702	1802	2.200	0.59313	14.424	0.0949	1974	16.013	136.6	0.36	0.00

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	A/A	W	A/AC	NORM	G	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.206	59.067	2653	687.5(926)	1.3142	21.179	2850											
46.206	37.739	2362	582.6(822)	1.3234	21.179	2709	0.846	2292	2.514	0.56729	14.672	0.0975	1968	20.915	135.5	0.92	0.04
COMBUSTOR	0	20	13 21														
46.216	60.583	2485	687.3(872)	1.3210	21.061	2784											
46.216	37.594	2211	581.7(767)	1.3304	21.061	2635	0.872	2299	2.495	0.58674	14.672	0.0976	1969	20.966	135.5	0.92	0.01
COMBUSTOR	0	21	14 21														
46.260	60.665	2461	686.5(863)	1.3221	21.043	2773											
46.260	36.958	2178	576.1(755)	1.3318	21.043	2618	0.890	2330	2.489	0.58498	14.672	0.0979	1990	21.184	135.6	0.92	0.00
COMBUSTOR	0	22	15 21														
46.941	56.922	2425	673.8(849)	1.3233	21.040	2754											
46.941	27.113	2017	518.6(695)	1.3377	21.040	2525	1.104	2787	2.490	0.55690	14.672	0.1029	1985	24.120	135.3	0.92	0.00
COMBUSTOR	0	23	16 21														
47.310	54.446	2407	667.0(842)	1.3239	21.040	2744											
47.310	24.997	1983	506.0(682)	1.3369	21.040	2505	1.133	2838	2.491	0.54210	14.672	0.1057	1971	23.910	134.3	0.92	0.00
COMBUSTOR	0	24	17 21														
48.110	47.573	2519	652.5(883)	1.3183	21.160	2793											
48.110	23.167	2111	496.4(728)	1.3325	21.160	2571	1.087	2795	2.518	0.49832	14.672	0.1150	1957	21.642	133.4	0.92	0.04
COMBUSTOR	0	25	18 21														
48.741	34.780	2303	641.2(825)	1.3252	21.056	2719											
48.741	7.250	1587	352.2(537)	1.3549	21.056	2253	1.688	3803	2.526	0.45359	14.672	0.1263	1969	26.605	134.2	0.92	0.01
COMBUSTOR	0	26	19 21														
50.191	41.959	2286	619.0(796)	1.3281	21.043	2678											
50.191	12.395	1678	392.3(570)	1.3510	21.043	2314	1.455	3368	2.496	0.36862	14.672	0.1554	2029	19.293	138.3	0.92	0.00
COMBUSTOR	0	27	20 4														
50.721	40.635	2346	612.6(818)	1.3251	21.104	2706											
50.721	14.275	1604	409.2(615)	1.3450	21.104	2391	1.334	3190	2.507	0.34474	14.672	0.1662	2062	17.092	140.6	0.92	0.02
COMBUSTOR	0	28	21 4														
52.131	36.855	2526	597.8(863)	1.3163	21.280	2787											
52.131	12.025	1917	366.6(653)	1.3382	21.280	2448	1.389	3401	2.536	0.29382	14.672	0.1950	2151	15.527	146.6	0.92	0.08
COMBUSTOR	0	29	22 4														
54.231	32.924	2702	577.6(951)	1.3075	21.387	2866											
54.231	9.475	1998	307.3(682)	1.3326	21.387	2468	1.478	3677	2.575	0.24140	14.708	0.2379	2258	13.796	153.5	0.93	0.14
COMBUSTOR	0	30	23 2														
54.731	32.929	2694	573.6(948)	1.3078	21.389	2862											
54.731	8.550	1941	285.4(661)	1.3347	21.389	2454	1.548	3798	2.573	0.23154	14.708	0.2480	2279	13.665	155.0	0.93	0.14
COMBUSTOR	0	31	24 4														
55.481	31.867	2742	566.0(965)	1.3054	21.440	2881											
55.481	7.954	1959	267.9(667)	1.3333	21.441	2461	1.574	3875	2.581	0.21826	14.708	0.2631	2307	13.143	156.9	0.93	0.15
COMBUSTOR	0	32	25 3														
55.760	31.542	2756	566.0(970)	1.3047	21.456	2886											
55.760	7.732	1961	261.3(667)	1.3330	21.457	2461	1.587	3905	2.583	0.21373	14.708	0.2687	2317	12.970	157.5	0.93	0.16
COMBUSTOR	0	33	26 4														
56.241	27.658	2840	562.7(1002)	1.3006	21.535	2920											
56.241	5.622	1935	215.1(656)	1.3330	21.536	2440	1.709	4171	2.603	0.16885	14.708	0.3401	2396	10.944	162.9	0.93	0.18
COMBUSTOR	0	34	27 4														
57.666	26.632	2910	554.0(1027)	1.2970	21.614	2946											
57.666	5.119	1961	188.5(665)	1.3309	21.615	2450	1.745	4277	2.612	0.15612	14.708	0.3678	2437	10.377	165.7	0.93	0.21
COMBUSTOR	0	35	28 4														
57.721	23.661	3122	553.6(1107)	1.2866	21.801	3027											
57.721	6.266	2295	227.6(786)	1.3158	21.803	2624	1.539	4039	2.641	0.15560	14.708	0.3691	2439	9.766	165.8	0.93	0.26
COMBUSTOR	0	36	29 2														
57.861	23.665	3117	553.0(1105)	1.2868	21.798	3025											
57.861	6.157	2281	223.8(761)	1.3163	21.800	2617	1.551	4059	2.641	0.15453	14.708	0.3716	2441	9.747	166.0	0.93	0.26
COMBUSTOR	0	37	30 7														
57.941	28.464	2835	552.6(999)	1.3005	21.553	2916											
57.941	4.088	1833	169.4(618)	1.3370	21.553	2377	1.842	4379	2.599	0.15626	14.708	0.3675	2443	10.634	166.1	0.93	0.19

READING = 0049 BLOCK = 163 TIME = 352.473 MACH 7.2 PT = 994.749 TT = 3296.3

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	G	IVAL	PHI	ETAC
COMBUSTOR	0	38	51 4														
58.221	30.686	2756	551.2(970)	1.3042	21.488	2884											
58.221	4.250	1699	150.3(571)	1.3435	21.488	2298	1.949	4479	2.584	0.15583	14.708	0.3685	2449	10.646	166.5	0.93	0.17
COMBUSTOR	0	39	52 4														
58.447	33.405	2675	550.1(939)	1.3080	21.422	2850											
58.447	3.840	1565	132.6(524)	1.3506	21.422	2215	2.063	4570	2.568	0.15543	14.708	0.3695	2452	11.037	166.7	0.93	0.15
COMBUSTOR	0	40	33 6														
59.171	50.632	2387	547.0(833)	1.3212	21.192	2720											
59.171	2.525	1098	76.8(363)	1.3768	21.192	1863	2.576	4651	2.495	0.15302	14.708	0.3753	2460	11.535	167.3	0.93	0.08
COMBUSTOR	0	41	34 6														
60.191	22.635	3295	543.0(1172)	1.2772	21.982	3085											
60.191	6.725	2505	226.3(862)	1.3057	21.986	2720	1.464	3981	2.657	0.15204	14.708	0.3777	2470	9.406	168.0	0.93	0.32
COMBUSTOR	0	42	35 3														
62.201	23.432	3246	535.2(1153)	1.2796	21.954	3067											
62.201	6.625	2423	207.4(832)	1.3090	21.956	2660	1.511	4050	2.647	0.15733	14.708	0.3650	2471	9.902	166.0	0.93	0.31
COMBUSTOR	0	43	36 5														
63.621	21.746	3649	529.5(1307)	1.2559	22.347	3193											
63.621	11.000	3163	323.4(1112)	1.2764	22.358	2996	1.072	3212	2.682	0.16160	14.708	0.3555	2469	8.066	167.9	0.93	0.43
COMBUSTOR	0	44	37 3														
66.085	20.568	3661	517.4(1311)	1.2545	22.386	3194											
66.085	10.870	3206	323.3(1128)	1.2741	22.398	3011	1.035	3117	2.686	0.15518	14.708	0.3749	2468	7.419	167.8	0.93	0.44
COMBUSTOR	0	45	38 3														
66.461	19.117	3662	515.3(1311)	1.2541	22.392	3193											
66.461	10.885	3259	342.5(1149)	1.2718	22.404	3033	0.970	2940	2.692	0.14240	14.708	0.4032	2468	6.507	167.8	0.93	0.44
COMBUSTOR REGEN		46	39 21														
66.461	19.117	4105	724.0(1493)	1.2273	22.551	3348											
66.461	14.198	3884	618.4(1402)	1.2393	22.373	3271	0.703	2299	2.746	0.14240	14.708	0.4032	2517	5.088	171.2	0.93	0.44
NOZZLE AE		47	40 5														
88.697	19.117	3662	515.3(1284)	1.2541	22.392	3193											
88.697	0.511	1591	-294.6(519)	1.3378	22.409	2173	2.929	6366	2.692	0.02964	14.708	1.9371	3164	2.933	215.1	0.93	0.44
NOZZLE PO		48	41 5														
88.697	19.117	3662	515.3(1284)	1.2541	22.392	3193											
88.697	0.153	1163	-441.2(372)	1.3615	22.409	1875	3.691	6918	2.692	0.01316	14.708	4.3623	3333	1.415	226.6	0.93	0.44
NOZZLE AE REGEN		49	42 5														
88.697	19.117	4105	724.0(1493)	1.2273	22.551	3348											
88.697	0.580	1908	-181.3(632)	1.3230	22.409	2367	2.844	6731	2.746	0.02964	14.708	1.9371	3364	3.101	228.7	0.93	0.44
NOZZLE PO REGEN		50	43 5														
88.697	19.117	4105	724.0(1493)	1.2273	22.551	3348											
88.697	0.153	1364	-373.4(440)	1.3501	22.409	2021	3.666	7410	2.746	0.01203	14.708	4.7746	3574	1.385	243.0	0.93	0.44
FICTIVE COMBUSTR		68	61 0														
66.461	300.721	5285	515.3(1947)	1.1676	24.109	3567											
66.461	0.153	1138	-1285.1(343)	1.3433	24.593	1758	5.398	9492	2.509	0.02025	14.708	2.8352	4450	2.987	302.5	0.93	1.00
FICTIVE NOZZLE		69	62 0														
88.697	24.963	3594	484.6(1283)	1.2565	22.396	3169											
88.697	0.438	1394	-365.0(450)	1.3484	22.409	2042	3.189	6513	2.660	0.02964	14.708	1.9371	3194	3.000	217.2	0.93	0.44

XABS	P-IB	P-OB	PDA	QQA	Q-IB	Q-OB	LAWALL	P-IB/PSU	P-IB/PTO	P-OB/PSU	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.744E-01	0.000	0.000	0.000	2.970E-02	4.520E 00	6.936E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.654E 02	4.520E 00	6.936E-04	0.000	0.000
3.070E 01	1.135E 00	0.000	-9.694E 01	0.000	0.000	0.000	5.055E 02	7.436E 00	1.141E-03	0.000	0.000
3.508E 01	2.001E 00	0.000	-1.986E 02	0.000	0.000	0.000	6.604E 02	1.311E 01	2.012E-03	0.000	0.000
3.555E 01	2.150E 00	0.000	-2.175E 02	0.000	0.000	0.000	7.013E 02	1.409E 01	2.161E-03	0.000	0.000
3.606E 01	2.055E 00	0.000	-2.368E 02	-2.199E 02	-2.199E 02	0.000	7.246E 02	1.346E 01	2.066E-03	0.000	0.000
3.648E 01	2.287E 00	0.000	-2.574E 02	-2.252E 02	-2.252E 02	0.000	7.443E 02	1.496E 01	2.299E-03	0.000	0.000
3.660E 01	2.292E 00	3.251E 00	-2.967E 02	-2.267E 02	-2.267E 02	0.000	7.499E 02	1.502E 01	2.304E-03	2.130E 01	3.268E-03
3.660E 01	2.292E 00	3.270E 00	-2.967E 02	-2.268E 02	-2.268E 02	0.000	7.502E 02	1.502E 01	2.304E-03	2.142E 01	3.287E-03
3.701E 01	2.310E 00	4.520E 00	-2.979E 02	-2.322E 02	-2.322E 02	0.000	7.922E 02	1.513E 01	2.322E-03	2.961E 01	4.544E-03
3.727E 01	2.238E 00	5.325E 00	-2.965E 02	-2.358E 02	-2.358E 02	0.000	8.196E 02	1.466E 01	2.250E-03	3.489E 01	5.353E-03
3.803E 01	2.030E 00	8.282E 00	-2.786E 02	-2.470E 02	-2.470E 02	0.000	9.012E 02	1.330E 01	2.041E-03	5.426E 01	8.326E-03
3.873E 01	6.672E 00	1.101E 01	-2.783E 02	-3.170E 02	-2.633E 02	-5.449E 01	9.794E 02	4.371E 01	6.707E-03	7.215E 01	1.107E-02
3.875E 01	6.798E 00	1.096E 01	-2.786E 02	-3.193E 02	-2.639E 02	-5.545E 01	9.815E 02	4.454E 01	6.834E-03	7.183E 01	1.102E-02
3.901E 01	8.520E 00	1.030E 01	-2.843E 02	-3.415E 02	-2.730E 02	-6.854E 01	1.011E 03	5.582E 01	8.565E-03	6.746E 01	1.035E-02
3.950E 01	1.148E 01	9.043E 00	-3.029E 02	-3.884E 02	-2.953E 02	-9.311E 01	1.067E 03	7.522E 01	1.154E-02	5.924E 01	9.091E-03
3.975E 01	1.121E 01	8.400E 00	-3.125E 02	-4.151E 02	-3.095E 02	-1.056E 02	1.096E 03	7.344E 01	1.127E-02	5.503E 01	8.444E-03
4.000E 01	1.094E 01	8.181E 00	-3.191E 02	-4.436E 02	-3.256E 02	-1.181E 02	1.125E 03	7.167E 01	1.100E-02	5.360E 01	8.225E-03
4.022E 01	1.308E 01	7.987E 00	-3.266E 02	-4.701E 02	-3.411E 02	-1.290E 02	1.151E 03	8.569E 01	1.315E-02	5.233E 01	8.030E-03
4.040E 01	1.481E 01	1.044E 01	-3.328E 02	-4.919E 02	-3.540E 02	-1.379E 02	1.171E 03	9.704E 01	1.489E-02	6.843E 01	1.050E-02
4.041E 01	1.491E 01	1.056E 01	-3.330E 02	-4.932E 02	-3.548E 02	-1.384E 02	1.173E 03	9.768E 01	1.499E-02	6.932E 01	1.064E-02
4.073E 01	1.802E 01	1.499E 01	-3.412E 02	-5.332E 02	-3.789E 02	-1.543E 02	1.210E 03	1.180E 02	1.811E-02	9.819E 01	1.507E-02
4.122E 01	2.276E 01	2.037E 00	-3.726E 02	-5.963E 02	-4.182E 02	-1.781E 02	1.268E 03	1.491E 02	2.288E-02	1.335E 01	2.048E-03
4.150E 01	2.546E 01	2.103E 00	-4.043E 02	-6.334E 02	-4.419E 02	-1.914E 02	1.301E 03	1.668E 02	2.560E-02	1.378E 01	2.115E-03
4.246E 01	3.657E 01	2.330E 00	-5.297E 02	-7.911E 02	-5.330E 02	-2.582E 02	1.415E 03	2.396E 02	3.677E-02	1.527E 01	2.343E-03
4.271E 01	3.811E 01	2.389E 00	-5.646E 02	-8.406E 02	-5.586E 02	-2.820E 02	1.444E 03	2.497E 02	3.831E-02	1.565E 01	2.401E-03
4.272E 01	3.817E 01	2.391E 00	-5.660E 02	-8.427E 02	-5.597E 02	-2.830E 02	1.445E 03	2.501E 02	3.837E-02	1.566E 01	2.403E-03
4.278E 01	3.858E 01	2.406E 00	-5.752E 02	-8.564E 02	-5.666E 02	-2.898E 02	1.453E 03	2.527E 02	3.878E-02	1.576E 01	2.419E-03
4.431E 01	4.812E 01	2.866E 01	-7.078E 02	-1.232E 03	-7.491E 02	-4.831E 02	1.637E 03	3.152E 02	4.837E-02	1.877E 02	2.881E-02
4.480E 01	5.117E 01	3.707E 01	-7.328E 02	-1.371E 03	-8.152E 02	-5.554E 02	1.697E 03	3.353E 02	5.145E-02	2.429E 02	3.727E-02
4.550E 01	4.676E 01	4.911E 01	-7.416E 02	-1.569E 03	-9.103E 02	-6.592E 02	1.783E 03	3.063E 02	4.700E-02	3.217E 02	4.937E-02
4.621E 01	4.231E 01	3.317E 01	-7.216E 02	-1.760E 03	-1.002E 03	-7.641E 02	1.869E 03	2.772E 02	4.253E-02	2.173E 02	3.334E-02
4.622E 01	4.225E 01	3.294E 01	-7.206E 02	-1.769E 03	-1.004E 03	-7.656E 02	1.870E 03	2.768E 02	4.247E-02	2.158E 02	3.312E-02
4.626E 01	4.197E 01	3.195E 01	-7.193E 02	-1.781E 03	-1.009E 03	-7.722E 02	1.875E 03	2.750E 02	4.219E-02	2.093E 02	3.211E-02
4.694E 01	3.768E 01	1.655E 01	-7.176E 02	-1.968E 03	-1.094E 03	-8.740E 02	1.959E 03	2.468E 02	3.788E-02	1.084E 02	1.664E-02
4.731E 01	3.535E 01	1.464E 01	-7.287E 02	-2.068E 03	-1.139E 03	-9.293E 02	2.005E 03	2.316E 02	3.554E-02	9.593E 01	1.472E-02
4.811E 01	3.582E 01	1.051E 01	-7.359E 02	-2.282E 03	-1.232E 03	-1.050E 03	2.104E 03	2.347E 02	3.601E-02	6.885E 01	1.057E-02
4.874E 01	7.250E 00	7.250E 00	-7.178E 02	-2.447E 03	-1.302E 03	-1.145E 03	2.183E 03	4.750E 01	7.288E-03	4.750E 01	7.288E-03
5.019E 01	1.239E 01	1.239E 01	-6.444E 02	-2.773E 03	-1.452E 03	-1.320E 03	2.364E 03	8.120E 01	1.246E-02	8.120E 01	1.246E-02
5.072E 01	1.427E 01	1.427E 01	-6.075E 02	-2.866E 03	-1.504E 03	-1.363E 03	2.430E 03	9.352E 01	1.435E-02	9.352E 01	1.435E-02
5.213E 01	1.202E 01	1.202E 01	-5.103E 02	-3.085E 03	-1.630E 03	-1.455E 03	2.608E 03	7.878E 01	1.209E-02	7.878E 01	1.209E-02
5.423E 01	9.475E 00	9.475E 00	-3.920E 02	-3.363E 03	-1.792E 03	-1.571E 03	2.874E 03	6.207E 01	9.525E-03	6.207E 01	9.525E-03
5.473E 01	8.550E 00	8.550E 00	-3.685E 02	-3.421E 03	-1.825E 03	-1.595E 03	2.938E 03	5.601E 01	8.595E-03	5.601E 01	8.595E-03
5.548E 01	7.954E 00	7.954E 00	-3.366E 02	-3.503E 03	-1.873E 03	-1.631E 03	3.034E 03	5.211E 01	7.996E-03	5.211E 01	7.996E-03
5.576E 01	7.732E 00	7.732E 00	-3.254E 02	-3.533E 03	-1.889E 03	-1.643E 03	3.069E 03	5.066E 01	7.773E-03	5.066E 01	7.773E-03
5.624E 01	3.894E 00	7.350E 00	-2.451E 02	-3.581E 03	-1.917E 03	-1.663E 03	3.102E 03	2.551E 01	3.914E-03	4.815E 01	7.389E-03
5.767E 01	5.119E 00	5.119E 00	-2.007E 02	-3.708E 03	-1.992E 03	-1.716E 03	3.209E 03	3.354E 01	5.146E-03	3.354E 01	5.146E-03
5.772E 01	7.500E 00	5.033E 00	-1.993E 02	-3.713E 03	-1.995E 03	-1.718E 03	3.217E 03	4.913E 01	7.540E-03	3.297E 01	5.059E-03
5.786E 01	7.500E 00	4.814E 00	-1.961E 02	-3.724E 03	-2.001E 03	-1.723E 03	3.234E 03	4.913E 01	7.540E-03	3.153E 01	4.839E-03
5.794E 01	4.688E 00	4.688E 00	-1.942E 02	-3.730E 03	-2.005E 03	-1.725E 03	3.245E 03	3.071E 01	4.713E-03	3.071E 01	4.713E-03
5.822E 01	4.250E 00	4.250E 00	-1.883E 02	-3.750E 03	-2.017E 03	-1.733E 03	3.280E 03	2.784E 01	4.272E-03	2.784E 01	4.272E-03
5.845E 01	3.840E 00	3.840E 00	-1.844E 02	-3.766E 03	-2.026E 03	-1.739E 03	3.309E 03	2.515E 01	3.860E-03	2.515E 01	3.860E-03
5.917E 01	2.525E 00	2.525E 00	-1.758E 02	-3.811E 03	-2.054E 03	-1.757E 03	3.402E 03	1.654E 01	2.538E-03	1.654E 01	2.538E-03
6.019E 01	6.725E 00	6.725E 00	-1.651E 02	-3.871E 03	-2.088E 03	-1.784E 03	3.532E 03	4.406E 01	6.760E-03	4.406E 01	6.760E-03
6.220E 01	6.625E 00	6.625E 00	-1.635E 02	-3.987E 03	-2.137E 03	-1.850E 03	3.790E 03	4.340E 01	6.660E-03	4.340E 01	6.660E-03
6.362E 01	1.100E 01	1.100E 01	-1.635E 02	-4.069E 03	-2.170E 03	-1.898E 03	3.972E 03	7.206E 01	1.106E-02	7.206E 01	1.106E-02

READING = 0089 BLOCK = 163 TIME = 352.473 MACH 7.2 PT = 994.749 TT = 5296.5

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.608E 01	1.087E 01	1.087E 01	-1.635E 02	-4.247E 03	-2.250E 03	-1.997E 03	4.289E 03	7.121E 01	1.093E-02	7.121E 01	1.093E-02
6.646E 01	1.092E 01	1.085E 01	-1.635E 02	-4.276E 03	-2.264E 03	-2.014E 03	4.337E 03	7.154E 01	1.098E-02	7.108E 01	1.091E-02
6.650E 01	1.092E 01	1.085E 01	-1.635E 02	-4.262E 03	-2.266E 03	-2.016E 03	4.342E 03	7.154E 01	1.098E-02	7.107E 01	1.091E-02
6.670E 01	1.044E 01	1.084E 01	-1.635E 02	-4.298E 03	-2.273E 03	-2.025E 03	4.368E 03	6.838E 01	1.049E-02	7.100E 01	1.089E-02
6.836E 01	6.430E 00	7.288E 00	-6.536E 01	-4.412E 03	-2.325E 03	-2.086E 03	4.584E 03	4.212E 01	6.464E-03	4.775E 01	7.327E-03
6.980E 01	2.695E 00	4.209E 00	1.801E 02	-4.484E 03	-2.354E 03	-2.130E 03	4.761E 03	1.766E 01	2.709E-03	2.758E 01	4.232E-03
7.052E 01	2.056E 00	2.670E 00	2.542E 02	-4.515E 03	-2.364E 03	-2.150E 03	4.849E 03	1.347E 01	2.067E-03	1.749E 01	2.684E-03
7.113E 01	1.515E 00	2.424E 00	3.006E 02	-4.539E 03	-2.371E 03	-2.168E 03	4.923E 03	9.925E 00	1.523E-03	1.588E 01	2.437E-03
7.251E 01	9.400E-01	1.867E 00	3.759E 02	-4.587E 03	-2.385E 03	-2.202E 03	5.069E 03	6.158E 00	9.450E-04	1.223E 01	1.877E-03
7.404E 01	6.941E-01	1.250E 00	4.304E 02	-4.624E 03	-2.396E 03	-2.229E 03	5.273E 03	4.547E 00	6.978E-04	8.189E 00	1.257E-03
7.419E 01	6.700E-01	1.089E 00	4.343E 02	-4.627E 03	-2.397E 03	-2.231E 03	5.291E 03	4.389E 00	6.735E-04	7.135E 00	1.095E-03
7.494E 01	7.439E-01	2.850E-01	4.579E 02	-4.644E 03	-2.402E 03	-2.242E 03	5.375E 03	4.874E 00	7.478E-04	1.867E 00	2.865E-04
7.494E 01	7.443E-01	2.807E-01	4.584E 02	-4.644E 03	-2.402E 03	-2.242E 03	5.375E 03	4.876E 00	7.482E-04	1.839E 00	2.822E-04
7.627E 01	8.750E-01	0.000	4.756E 02	-4.676E 03	-2.409E 03	-2.267E 03	5.427E 03	5.732E 00	8.796E-04	0.000	0.000
7.912E 01	1.035E 00	0.000	5.137E 02	-4.688E 03	-2.422E 03	-2.267E 03	5.525E 03	6.780E 00	1.040E-03	0.000	0.000
8.302E 01	7.900E-01	0.000	5.527E 02	-4.701E 03	-2.434E 03	-2.267E 03	5.630E 03	5.175E 00	7.942E-04	0.000	0.000
8.583E 01	6.350E-01	0.000	5.686E 02	-4.711E 03	-2.445E 03	-2.267E 03	5.665E 03	4.160E 00	6.384E-04	0.000	0.000
8.869E 01	8.450E-01	0.000	5.864E 02	-4.729E 03	-2.463E 03	-2.267E 03	5.707E 03	5.536E 00	8.495E-04	0.000	0.000
8.870E 01	8.454E-01	0.000	5.864E 02	-4.729E 03	-2.463E 03	-2.267E 03	5.707E 03	5.539E 00	8.499E-04	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.639E 01	8.639E 01	2.313E-03	3.426E-02
4.041E 01	1.662E-01	8.656E 01	2.809E-03	3.716E-02
4.073E 01	5.372E 00	9.193E 01	2.512E-03	4.877E-02
4.122E 01	7.948E 00	9.988E 01	2.748E-03	5.753E-02
4.150E 01	4.568E 00	1.044E 02	2.617E-03	4.159E-02
4.246E 01	1.429E 01	1.187E 02	2.833E-03	4.792E-02
4.271E 01	3.563E 00	1.223E 02	3.203E-03	4.520E-02
4.272E 01	1.423E-01	1.225E 02	2.959E-03	4.869E-02
4.278E 01	8.966E-01	1.234E 02	2.931E-03	4.924E-02
4.431E 01	1.752E 01	1.409E 02	3.218E-03	5.492E-02
4.480E 01	4.121E 00	1.450E 02	3.360E-03	5.200E-02
4.550E 01	5.136E 00	1.501E 02	3.375E-03	5.095E-02
4.621E 01	5.779E 00	1.559E 02	3.757E-03	4.730E-02
4.622E 01	9.154E-02	1.560E 02	3.316E-03	5.507E-02
4.626E 01	3.717E-01	1.564E 02	3.229E-03	5.653E-02
4.694E 01	6.032E 00	1.624E 02	3.123E-03	5.158E-02
4.731E 01	3.421E 00	1.658E 02	3.116E-03	4.909E-02
4.811E 01	7.030E 00	1.729E 02	3.113E-03	4.525E-02
4.874E 01	6.021E 00	1.789E 02	3.220E-03	2.253E-02
5.019E 01	1.290E 01	1.918E 02	2.957E-03	3.121E-02
5.072E 01	3.564E 00	1.953E 02	2.937E-03	3.325E-02
5.213E 01	8.400E 00	2.037E 02	2.865E-03	2.961E-02
5.423E 01	1.124E 01	2.150E 02	2.895E-03	2.428E-02
5.473E 01	2.577E 00	2.176E 02	2.996E-03	2.190E-02
5.548E 01	3.823E 00	2.214E 02	2.956E-03	2.090E-02
5.576E 01	1.385E 00	2.226E 02	2.965E-03	2.025E-02
5.624E 01	1.135E 00	2.239E 02	2.869E-03	1.584E-02
5.767E 01	3.296E 00	2.272E 02	2.874E-03	1.463E-02
5.772E 01	2.076E-01	2.274E 02	2.976E-03	1.605E-02
5.786E 01	5.270E-01	2.279E 02	3.102E-03	1.525E-02
5.794E 01	3.396E-01	2.283E 02	3.410E-03	1.163E-02
5.822E 01	1.197E 00	2.295E 02	2.836E-03	1.305E-02
5.845E 01	8.819E-01	2.304E 02	2.754E-03	1.245E-02
5.917E 01	2.818E 00	2.332E 02	2.636E-03	9.556E-03
6.019E 01	3.562E 00	2.367E 02	2.568E-03	1.877E-02
6.220E 01	7.097E 00	2.438E 02	3.133E-03	1.556E-02
6.362E 01	5.205E 00	2.490E 02	3.226E-03	1.934E-02
6.608E 01	8.136E 00	2.572E 02	3.421E-03	1.752E-02
6.646E 01	1.163E 00	2.583E 02	3.501E-03	1.657E-02
6.650E 01	1.172E-01	2.584E 02	3.513E-03	1.661E-02
6.670E 01	5.916E-01	2.590E 02	3.503E-03	1.656E-02
6.836E 01	5.382E 00	2.644E 02	3.371E-03	1.439E-02
6.980E 01	4.403E 00	2.686E 02	3.231E-03	9.655E-03
7.052E 01	1.897E 00	2.707E 02	3.162E-03	7.706E-03
7.113E 01	1.417E 00	2.721E 02	3.130E-03	6.806E-03
7.251E 01	2.805E 00	2.749E 02	3.070E-03	5.364E-03
7.404E 01	2.575E 00	2.775E 02	3.006E-03	4.108E-03
7.419E 01	2.103E-01	2.777E 02	2.989E-03	3.817E-03
7.494E 01	8.590E-01	2.786E 02	2.896E-03	2.558E-03
7.494E 01	1.380E-03	2.786E 02	2.896E-03	2.551E-03
7.627E 01	5.247E-01	2.791E 02	2.976E-03	3.766E-03
7.912E 01	1.210E 00	2.803E 02	2.988E-03	4.257E-03
8.302E 01	1.250E 00	2.816E 02	2.924E-03	3.467E-03
8.583E 01	5.584E-01	2.821E 02	2.875E-03	2.933E-03
8.869E 01	2.360E-01	2.824E 02	2.908E-03	3.606E-03
8.870E 01	0.000	2.824E 02	2.908E-03	3.606E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	329.	(LBF)
MEASURED THRUST	1234.	(LBF)
CALCULATED SPECIFIC IMPULSE	786.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2946.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.2303	
MEASURED THRUST COEFFICIENT	0.8655	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3397.	(LBF)
NET THRUST	532.	(LBF)
SPECIFIC IMPULSE	1270.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.3721	

MOMENTUM AND FORCES

INLET FRICTION DRAG	86.4	(LBF)
INLET MOMENTUM CHANGE	-419.2	(LBF)
COMBUSTOR FRICTION DRAG	171.9	(LBF)
COMBUSTOR STRUT DRAG	-24.96	(LBF)
COMBUSTOR MOMENTUM CHANGE	22.	(LBF)
NOZZLE FRICTION DRAG	24.04	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	726.	(LBF)
NOZZLE PRESSURE INTEGRAL	750.	(LBF)
EXTERNAL FRICTION DRAG	76.38	(LBF)
EXTERNAL PRESSURE INTEGRAL	-695.	(LBF)
TOTAL EXTERNAL DRAG	-771.	(LBF)
TOTAL STRUT DRAG	-24.96	(LBF)
CAVITY FORCE	-895.	(LBF)
CALCULATED LOAD CELL FORCE	-1337.	(LBF)
MEASURED LOAD CELL FORCE	-435.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7210	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.605	(IN)
NOZZLE SHROUD TRAILING EDGE	74.945	(IN)
NOZZLE PLUG TRAILING EDGE	88.697	(IN)
STRUT LEADING EDGE	57.861	(IN)
STRUT TRAILING EDGE	66.461	(IN)
COMBUSTOR EXIT	66.461	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9892	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0987	
DELTA PT2	0.0876	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3023	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.0999	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9006	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9119	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9244	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8765	
ENTHALPY AT P0 - SUPERSONIC	-24.46	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	14.46	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0293
EQUIVALENCE RATIO	0.930
COMBUSTOR EFFICIENCY	0.459
TOTAL PRESSURE RATIO	0.0636
COMBUSTOR EFFECTIVENESS	0.4413
INJECTOR DISCHARGE COEFFICIENTS	0.9610, 0.5506,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	1.0097
NOZZLE COEFFICIENT - CT	0.9356
PROCESS EFFICIENCY	1.0713
KINETIC ENERGY EFFICIENCY	1.0196

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.706	B
1C	44.300	
2A	50.181	
2C	46.250	
3A	55.471	
3B	57.656	
4	46.206	C

Reading 89

t = 316.47 sec.

Recomputations with surface pressure substitutions.

3/6/75

READING = 0089 BLOCK = 143 TIME = 316.473 MACH 7.3 PT = 995.499 TT = 2722.9

RAMJET PERFORMANCE

SUMMARY REPORT

Input Pressure Channel 123, 206, 270, 273

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
WIND TUNNEL		1	0 5														
0.000	995.499	2723	587.1(714)	1.3019	28.909	2469											
0.000	0.156	256	-67.7(61)	1.3947	28.908	784	7.302	5724	1.779	0.06518	16.528	0.9901	2980	5.798	180.3		
SPIKE TIP NS		2	0 6														
0.600	11.175	2723	587.1(714)	1.3019	28.908	2469											
0.600	10.223	2667	570.6(698)	1.3037	28.908	2445	0.372	909	2.087	0.06518	16.528	0.9901	3059	0.921	185.1		
WIND TUNNEL		3	0 0														
0.000	995.499	2723	587.1(714)	1.3019	28.909	2469											
0.000	0.163	259	-66.9(62)	1.3949	28.908	789	7.251	5721	1.779	0.06727	17.059	0.9901	3075	5.981	180.2		
SPIKE TIP NS		4	0 0														
0.600	11.175	2723	587.1(714)	1.3019	28.908	2469											
0.600	10.152	2663	569.3(697)	1.3039	28.908	2444	0.386	943	2.087	0.06727	17.059	0.9901	3075	0.986	180.2		
INLET THROAT		5	0 4														
40.400	332.041	2618	556.1(684)	1.3053	28.909	2424											
40.400	10.420	1092	136.4(266)	1.3733	28.908	1606	2.854	4583	1.843	0.81836	16.528	0.0789	2565	58.282	155.2		
INLET UPNRSK		6	0 3														
40.400	332.041	2618	556.1(684)	1.3053	28.909	2424											
40.400	8.980	1048	125.5(255)	1.3760	28.908	1575	2.947	4642	1.843	0.74396	16.528	0.0867	2584	53.669	156.4		
INLET DNNRSK		7	0 4														
40.400	104.177	2618	556.1(684)	1.3053	28.908	2424											
40.400	90.605	2534	531.4(659)	1.3081	28.908	2387	0.466	1112	1.922	0.74396	16.528	0.0867	2584	12.857	156.4		
COMBUSTOR	0	8	1 10														
40.410	239.443	2588	564.7(721)	1.3083	26.979	2498											
40.410	13.261	1251	169.8(328)	1.3648	26.979	1774	2.506	4445	1.972	0.82283	16.620	0.0789	2564	56.845	154.3	0.18	0.07
COMBUSTOR	0	9	2 5														
40.733	171.741	2826	561.9(792)	1.2974	27.244	2587											
40.733	18.122	1640	202.8(435)	1.3407	27.244	2003	2.116	4239	2.017	0.82585	16.620	0.0786	2555	54.408	153.7	0.18	0.33
COMBUSTOR	0	10	3 21														
41.223	216.454	2546	557.5(709)	1.3099	26.959	2480											
41.223	12.426	1239	172.4(325)	1.3656	26.959	1767	2.485	4390	1.975	0.81959	16.620	0.0792	2520	55.911	151.6	0.18	0.05
COMBUSTOR	0	11	4 3														
41.500	204.997	2494	554.9(693)	1.3122	26.913	2459											
41.500	13.805	1262	192.2(331)	1.3646	26.913	1784	2.388	4260	1.973	0.81147	16.620	0.0800	2483	53.721	149.4	0.18	0.00
COMBUSTOR	0	12	5 4														
42.460	110.879	2630	544.6(733)	1.3056	27.091	2510											
42.460	21.095	1756	280.6(470)	1.3368	27.091	2076	1.751	3634	2.031	0.76526	16.620	0.0848	2336	43.221	140.5	0.18	0.18
COMBUSTOR	0	13	6 8														
42.708	103.023	2465	547.0(711)	1.3140	25.861	2495											
42.708	21.674	1676	301.5(467)	1.3432	25.861	2080	1.685	3504	2.086	0.75841	16.679	0.0859	2293	41.304	137.5	0.29	0.05
COMBUSTOR	0	14	7 2														
42.718	102.911	2462	546.8(710)	1.3141	25.859	2494											
42.718	21.698	1675	301.9(466)	1.3432	25.859	2080	1.683	3501	2.086	0.75876	16.679	0.0858	2292	41.279	137.4	0.29	0.04
COMBUSTOR	0	15	8 2														
42.783	101.169	2450	546.0(707)	1.3146	25.850	2489											
42.783	21.850	1677	305.3(467)	1.3433	25.850	2081	1.668	3470	2.086	0.75645	16.679	0.0861	2281	40.797	136.7	0.29	0.04
COMBUSTOR	0	16	9 3														
44.310	70.273	2452	527.1(707)	1.3138	25.911	2486											
44.310	36.964	2099	415.2(595)	1.3260	25.911	2311	1.024	2366	2.113	0.69887	16.679	0.0932	2109	25.701	126.4	0.29	0.08
COMBUSTOR	0	17	10 4														
44.800	68.526	2342	521.1(673)	1.3186	25.820	2439											
44.800	41.814	2076	437.2(589)	1.3279	25.820	2304	0.889	2049	2.102	0.68978	16.679	0.0944	2073	21.968	124.3	0.29	0.02
COMBUSTOR	0	18	11 21														
45.503	67.255	2293	512.8(658)	1.3205	25.798	2416											
45.503	44.827	2076	444.5(590)	1.3281	25.797	2305	0.801	1848	2.097	0.68609	16.679	0.0949	2048	19.704	122.8	0.29	0.00

READING = 0089 BLOCK = 143 TIME = 316.473 MACH 7.3 PT = 995.499 TT = 2722.9

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 2														
46.218	67.927	2278	504.3(653)	1.3209	25.809	2408											
46.218	46.432	2075	440.6(589)	1.3280	25.809	2304	0.775	1786	2.094	0.66735	16.679	0.0976	2086	18.521	125.1	0.29	0.01
COMBUSTOR	0	20	13 21														
46.250	63.987	2271	521.7(716)	1.3239	23.380	2529											
46.250	46.504	2100	462.4(657)	1.3300	23.380	2437	0.707	1722	2.268	0.67162	16.833	0.0979	2066	17.975	122.8	0.59	0.04
COMBUSTOR	0	21	14 21														
46.260	64.850	2181	521.5(686)	1.3281	23.301	2486											
46.260	46.526	2008	462.3(627)	1.3343	23.301	2391	0.720	1722	2.254	0.67132	16.833	0.0979	2068	17.970	122.8	0.59	0.01
COMBUSTOR	0	22	15 21														
46.943	67.421	2144	513.4(673)	1.3295	23.289	2467											
46.943	48.059	1970	454.1(614)	1.3359	23.289	2370	0.727	1724	2.245	0.63896	16.833	0.1029	2168	17.119	128.8	0.59	0.00
COMBUSTOR	0	23	16 4														
47.310	67.147	2332	509.1(736)	1.3206	23.467	2555											
47.310	45.805	2124	436.9(664)	1.3280	23.467	2445	0.777	1900	2.270	0.62225	16.833	0.1056	2233	18.374	132.7	0.59	0.07
COMBUSTOR	0	24	17 5														
48.110	65.752	2777	499.6(884)	1.2999	23.902	2740											
48.110	42.958	2515	406.0(792)	1.3088	23.902	2616	0.827	2164	2.317	0.57190	16.833	0.1149	2397	19.236	142.4	0.59	0.25
COMBUSTOR	0	25	18 3														
48.743	66.086	2832	492.2(902)	1.2971	23.974	2760											
48.743	50.000	2656	428.8(840)	1.3030	23.975	2679	0.665	1782	2.321	0.52038	16.833	0.1263	2549	14.408	151.5	0.59	0.27
COMBUSTOR	0	26	19 4														
50.183	58.298	3486	492.3(1205)	1.2666	22.981	3091											
50.183	22.666	2838	234.7(956)	1.2897	22.987	2814	1.276	3590	2.515	0.42650	16.954	0.1552	2793	23.797	164.7	0.82	0.43
COMBUSTOR	0	27	20 2														
50.193	58.356	3482	492.3(1204)	1.2668	22.977	3089											
50.193	22.477	2829	232.6(952)	1.2901	22.983	2810	1.283	3605	2.514	0.42594	16.954	0.1554	2794	23.860	164.8	0.82	0.43
COMBUSTOR	0	28	21 6														
50.723	71.995	3014	488.4(1031)	1.2899	22.541	2928											
50.723	12.417	1992	104.9(652)	1.3260	22.542	2414	1.815	4381	2.461	0.39836	16.954	0.1662	2837	27.120	167.3	0.82	0.29
COMBUSTOR	0	29	22 4														
52.133	64.893	3133	479.2(1074)	1.2839	22.673	2970											
52.133	10.475	2049	69.8(670)	1.3221	22.675	2437	1.857	4526	2.479	0.33951	16.954	0.1950	2908	23.881	171.5	0.82	0.33
COMBUSTOR	0	30	23 4														
54.233	54.557	3331	466.0(1151)	1.2737	22.813	3041											
54.233	9.000	2212	35.5(727)	1.3131	22.817	2516	1.845	4641	2.514	0.27884	16.989	0.2379	2999	20.113	176.5	0.83	0.40
COMBUSTOR	0	31	24 4														
54.733	52.258	3391	463.4(1173)	1.2705	22.877	3060											
54.733	8.800	2270	29.8(747)	1.3101	22.882	2542	1.833	4658	2.521	0.26745	16.989	0.2480	3019	19.361	177.7	0.83	0.42
COMBUSTOR	0	32	25 4														
55.483	49.191	3479	459.7(1205)	1.2656	22.972	3087											
55.483	8.527	2355	21.6(777)	1.3057	22.979	2579	1.815	4682	2.532	0.25211	16.989	0.2631	3047	18.345	179.4	0.83	0.45
COMBUSTOR	0	33	26 4														
55.760	48.186	3510	458.4(1216)	1.2639	23.006	3096											
55.760	8.426	2384	18.5(787)	1.3042	23.014	2592	1.810	4692	2.536	0.24691	16.989	0.2686	3057	18.003	179.9	0.83	0.46
COMBUSTOR	0	34	27 4														
56.243	42.656	3570	456.2(1239)	1.2602	23.071	3114											
56.243	6.162	2327	-29.8(765)	1.3054	23.081	2558	1.928	4931	2.549	0.19504	16.989	0.3401	3141	14.947	184.9	0.83	0.48
COMBUSTOR	0	35	28 5														
57.668	57.674	3228	450.3(1112)	1.2784	22.752	3003											
57.668	3.968	1722	-113.9(554)	1.3340	22.755	2240	2.372	5314	2.500	0.18030	16.989	0.3679	3180	14.888	187.2	0.83	0.38
COMBUSTOR	0	36	29 5														
57.723	38.345	3731	450.1(1298)	1.2502	23.249	3158											
57.723	6.064	2508	-37.1(828)	1.2966	23.267	2636	1.873	4938	2.567	0.17976	16.989	0.3690	3180	13.794	187.2	0.83	0.53
COMBUSTOR	0	37	30 4														
57.863	38.967	3696	449.6(1286)	1.2523	23.216	3149											
57.863	5.853	2451	-44.3(808)	1.2991	23.231	2610	1.904	4971	2.564	0.17850	16.989	0.3716	3182	13.790	187.3	0.83	0.52

READING = 0089 BLOCK = 143 TIME = 316.473 MACH 7.3 PT = 995.499 TT = 2722.9

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	38	31 15														
57.943	76.913	3022	449.3(1036)	1.2884	22.562	2929											
57.943	3.141	1390	-148.3(442)	1.3532	22.563	2036	2.686	5468	2.458	0.18050	16.989	0.3675	3183	15.339	187.4	0.83	0.32
COMBUSTOR	0	39	32 6														
58.223	118.126	2809	448.3(958)	1.2983	22.370	2847											
58.223	2.300	1041	-183.5(329)	1.3741	22.370	1783	3.154	5623	2.401	0.17990	16.989	0.3687	3186	15.720	187.5	0.83	0.26
COMBUSTOR	0	40	33 4														
58.449	137.320	2754	447.5(938)	1.3008	22.323	2825											
58.449	2.080	948	-193.8(299)	1.3791	22.323	1706	3.320	5665	2.382	0.17960	16.989	0.3693	3188	15.811	187.7	0.83	0.25
COMBUSTOR	0	41	34 6														
59.173	263.350	2575	445.2(874)	1.3089	22.171	2749											
59.173	1.375	647	-226.0(204)	1.3925	22.171	1421	4.078	5796	2.305	0.17675	16.989	0.3753	3192	15.919	187.9	0.83	0.20
COMBUSTOR	0	42	35 7														
60.193	32.523	4100	441.9(1437)	1.2237	23.659	3247											
60.193	7.475	3067	1.3(1031)	1.2706	23.713	2858	1.643	4696	2.597	0.17562	16.989	0.3777	3203	12.816	188.5	0.83	0.66
COMBUSTOR	0	43	36 5														
62.203	29.486	4531	434.8(1600)	1.1863	24.156	3326											
62.203	10.512	3827	81.4(1315)	1.2248	24.309	3096	1.358	4205	2.619	0.18173	16.989	0.3650	3203	11.877	188.6	0.83	0.84
COMBUSTOR	0	44	37 4														
63.623	29.928	4577	429.5(1617)	1.1822	24.222	3333											
63.623	11.212	3915	88.6(1349)	1.2181	24.388	3118	1.324	4130	2.618	0.18666	16.989	0.3553	3201	11.980	188.4	0.83	0.86
COMBUSTOR	0	45	38 4														
66.087	27.941	4636	419.5(1639)	1.1752	24.316	3338											
66.087	11.230	4040	97.6(1396)	1.2070	24.505	3145	1.276	4014	2.623	0.17693	16.989	0.3749	3198	11.036	188.2	0.83	0.90
COMBUSTOR	0	46	39 4														
66.463	25.596	4712	417.9(1668)	1.1664	24.406	3346											
66.463	11.234	4198	120.5(1457)	1.1918	24.624	3178	1.214	3858	2.631	0.16449	16.989	0.4032	3197	9.861	188.2	0.83	0.95
COMBUSTOR	REGEN	47	40 3														
66.463	25.596	4886	554.6(1742)	1.1562	24.241	3404											
66.463	12.655	4472	285.7(1569)	1.1714	24.488	3261	1.125	3668	2.660	0.16449	16.989	0.4032	3244	9.376	190.9	0.83	0.95
NOZZLE AE		48	41 5														
88.699	25.596	4712	417.9(1604)	1.1664	24.406	3346											
88.699	0.744	2490	-603.5(797)	1.2796	24.767	2529	2.827	7149	2.631	0.03424	16.989	1.9371	4144	3.804	243.9	0.83	0.95
NOZZLE PO		49	42 5														
88.699	25.596	4712	417.9(1604)	1.1664	24.406	3346											
88.699	0.156	1744	-866.9(535)	1.3111	24.767	2143	3.742	8018	2.631	0.01149	16.989	5.7738	4465	1.432	262.8	0.83	0.95
NOZZLE AE	REGEN	50	43 5														
88.699	25.596	4886	554.6(1742)	1.1562	24.241	3404											
88.699	0.797	2728	-515.1(885)	1.2706	24.766	2638	2.773	7316	2.660	0.03424	16.989	1.9371	4258	3.893	250.7	0.83	0.95
NOZZLE PO	REGEN	51	44 5														
88.699	25.596	4886	554.6(1742)	1.1562	24.241	3404											
88.699	0.156	1896	-815.2(586)	1.3037	24.767	2227	3.717	8279	2.660	0.01091	16.989	6.0782	4614	1.404	271.6	0.83	0.95
FICTIVE COMBUSTR		69	62 0														
66.463	332.041	5008	417.9(1782)	1.1859	24.740	3455											
66.463	0.156	965	-1189.2(283)	1.3563	24.980	1614	5.556	8968	2.423	0.02342	16.989	2.8325	4848	3.263	285.4	0.83	1.00
FICTIVE NOZZLE		70	63 0														
88.699	14.568	4634	394.2(1656)	1.1621	24.381	3314											
88.699	0.976	2941	-433.8(965)	1.2618	24.763	2730	2.358	6437	2.672	0.03424	16.989	1.9371	3883	3.425	228.6	0.83	0.95

XABS	P-IB	P-OB	PDA	GOX	G-IB	G-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.697E-01	0.000	0.000	0.000	2.470E-02	4.425E 00	6.931E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.425E 00	6.931E-04	0.000	0.000
3.070E 01	1.135E 00	0.000	-9.694E 01	0.000	0.000	0.000	5.053E 02	7.279E 00	1.140E-03	0.000	0.000
3.508E 01	2.006E 00	0.000	-1.987E 02	0.000	0.000	0.000	6.804E 02	1.286E 01	2.015E-03	0.000	0.000
3.555E 01	2.155E 00	0.000	-2.177E 02	0.000	0.000	0.000	7.013E 02	1.382E 01	2.165E-03	0.000	0.000
3.606E 01	2.075E 00	0.000	-2.391E 02	-2.231E 02	-2.231E 02	0.000	7.246E 02	1.331E 01	2.084E-03	0.000	0.000
3.648E 01	2.279E 00	0.000	-2.578E 02	-2.285E 02	-2.285E 02	0.000	7.443E 02	1.462E 01	2.290E-03	0.000	0.000
3.660E 01	2.303E 00	3.111E 00	-2.957E 02	-2.301E 02	-2.301E 02	0.000	7.500E 02	1.477E 01	2.314E-03	1.995E 01	3.125E-03
3.661E 01	2.305E 00	3.131E 00	-2.958E 02	-2.301E 02	-2.301E 02	0.000	7.503E 02	1.478E 01	2.315E-03	2.008E 01	3.145E-03
3.701E 01	2.385E 00	4.428E 00	-2.979E 02	-2.356E 02	-2.356E 02	0.000	7.921E 02	1.530E 01	2.396E-03	2.840E 01	4.448E-03
3.727E 01	2.282E 00	5.275E 00	-2.970E 02	-2.393E 02	-2.393E 02	0.000	8.197E 02	1.463E 01	2.292E-03	3.383E 01	5.299E-03
3.803E 01	1.985E 00	8.266E 00	-2.794E 02	-2.506E 02	-2.506E 02	0.000	9.009E 02	1.273E 01	1.994E-03	5.301E 01	8.304E-03
3.873E 01	6.551E 00	1.104E 01	-2.781E 02	-3.190E 02	-2.693E 02	-4.966E 01	9.795E 02	4.201E 01	6.580E-03	7.083E 01	1.109E-02
3.875E 01	6.661E 00	1.100E 01	-2.783E 02	-3.204E 02	-2.700E 02	-5.044E 01	9.814E 02	4.272E 01	6.691E-03	7.054E 01	1.105E-02
3.901E 01	8.350E 00	1.031E 01	-2.835E 02	-3.435E 02	-2.811E 02	-6.237E 01	1.011E 03	5.355E 01	8.388E-03	6.612E 01	1.036E-02
3.950E 01	1.164E 01	9.013E 00	-3.021E 02	-3.941E 02	-3.094E 02	-8.474E 01	1.067E 03	7.465E 01	1.169E-02	5.781E 01	9.054E-03
3.975E 01	1.127E 01	8.344E 00	-3.119E 02	-4.242E 02	-3.280E 02	-9.624E 01	1.096E 03	7.228E 01	1.132E-02	5.351E 01	8.381E-03
4.000E 01	1.091E 01	8.058E 00	-3.187E 02	-4.564E 02	-3.490E 02	-1.074E 02	1.125E 03	6.997E 01	1.096E-02	5.168E 01	8.094E-03
4.022E 01	1.309E 01	7.800E 00	-3.262E 02	-4.872E 02	-3.697E 02	-1.175E 02	1.151E 03	8.396E 01	1.315E-02	5.002E 01	7.835E-03
4.040E 01	1.482E 01	1.140E 01	-3.322E 02	-5.121E 02	-3.866E 02	-1.255E 02	1.171E 03	9.507E 01	1.489E-02	7.309E 01	1.145E-02
4.041E 01	1.492E 01	1.160E 01	-3.324E 02	-5.135E 02	-3.876E 02	-1.259E 02	1.172E 03	9.570E 01	1.499E-02	7.440E 01	1.165E-02
4.073E 01	1.808E 01	1.816E 01	-3.367E 02	-5.602E 02	-4.197E 02	-1.405E 02	1.210E 03	1.160E 02	1.816E-02	1.165E 02	1.824E-02
4.122E 01	2.288E 01	1.975E 00	-3.638E 02	-6.337E 02	-4.716E 02	-1.621E 02	1.268E 03	1.467E 02	2.298E-02	1.267E 01	1.984E-03
4.150E 01	2.559E 01	2.023E 00	-3.956E 02	-6.769E 02	-5.028E 02	-1.741E 02	1.301E 03	1.641E 02	2.570E-02	1.298E 01	2.032E-03
4.246E 01	4.000E 01	2.191E 00	-5.295E 02	-8.406E 02	-6.146E 02	-2.340E 02	1.415E 03	2.565E 02	4.018E-02	1.405E 01	2.200E-03
4.271E 01	4.112E 01	2.234E 00	-5.681E 02	-8.986E 02	-6.432E 02	-2.554E 02	1.444E 03	2.637E 02	4.130E-02	1.433E 01	2.244E-03
4.272E 01	4.116E 01	2.236E 00	-5.696E 02	-9.006E 02	-6.443E 02	-2.563E 02	1.445E 03	2.640E 02	4.135E-02	1.434E 01	2.246E-03
4.278E 01	4.145E 01	2.247E 00	-5.796E 02	-9.139E 02	-6.516E 02	-2.623E 02	1.453E 03	2.658E 02	4.164E-02	1.441E 01	2.257E-03
4.431E 01	4.832E 01	2.561E 01	-7.336E 02	-1.229E 03	-8.005E 02	-4.284E 02	1.637E 03	3.099E 02	4.854E-02	1.642E 02	2.572E-02
4.480E 01	5.052E 01	3.310E 01	-7.646E 02	-1.328E 03	-8.392E 02	-4.892E 02	1.697E 03	3.240E 02	5.075E-02	2.123E 02	3.325E-02
4.550E 01	4.580E 01	4.386E 01	-7.846E 02	-1.468E 03	-8.911E 02	-5.767E 02	1.783E 03	2.937E 02	4.601E-02	2.813E 02	4.405E-02
4.622E 01	4.099E 01	5.187E 01	-7.408E 02	-1.610E 03	-9.424E 02	-6.671E 02	1.870E 03	2.629E 02	4.118E-02	3.327E 02	5.211E-02
4.625E 01	4.078E 01	5.223E 01	-7.366E 02	-1.616E 03	-9.447E 02	-6.712E 02	1.874E 03	2.615E 02	4.096E-02	3.350E 02	5.247E-02
4.626E 01	4.071E 01	5.234E 01	-7.352E 02	-1.618E 03	-9.454E 02	-6.725E 02	1.875E 03	2.611E 02	4.089E-02	3.357E 02	5.258E-02
4.694E 01	3.612E 01	6.000E 01	-6.302E 02	-1.754E 03	-9.931E 02	-7.613E 02	1.959E 03	2.316E 02	3.628E-02	3.848E 02	6.027E-02
4.731E 01	3.365E 01	5.796E 01	-5.626E 02	-1.828E 03	-1.018E 03	-8.096E 02	2.005E 03	2.158E 02	3.380E-02	3.717E 02	5.822E-02
4.811E 01	3.240E 01	5.352E 01	-3.933E 02	-1.987E 03	-1.072E 03	-9.154E 02	2.104E 03	2.078E 02	3.255E-02	3.432E 02	5.376E-02
4.874E 01	5.000E 01	5.000E 01	-2.364E 02	-2.112E 03	-1.113E 03	-9.993E 02	2.183E 03	3.207E 02	5.023E-02	3.207E 02	5.023E-02
5.018E 01	2.267E 01	2.267E 01	3.332E 01	-2.351E 03	-1.202E 03	-1.149E 03	2.363E 03	1.454E 02	2.277E-02	1.454E 02	2.277E-02
5.019E 01	2.248E 01	2.248E 01	3.450E 01	-2.353E 03	-1.203E 03	-1.150E 03	2.364E 03	1.442E 02	2.258E-02	1.442E 02	2.258E-02
5.072E 01	1.242E 01	1.242E 01	8.270E 01	-2.418E 03	-1.235E 03	-1.183E 03	2.430E 03	7.963E 01	1.247E-02	7.963E 01	1.247E-02
5.213E 01	1.047E 01	1.047E 01	1.673E 02	-2.573E 03	-1.315E 03	-1.258E 03	2.608E 03	6.718E 01	1.052E-02	6.718E 01	1.052E-02
5.423E 01	9.000E 00	9.000E 00	2.745E 02	-2.781E 03	-1.426E 03	-1.355E 03	2.874E 03	5.772E 01	9.041E-03	5.772E 01	9.041E-03
5.473E 01	8.800E 00	8.800E 00	2.977E 02	-2.825E 03	-1.450E 03	-1.374E 03	2.938E 03	5.644E 01	8.840E-03	5.644E 01	8.840E-03
5.548E 01	8.527E 00	8.527E 00	3.312E 02	-2.888E 03	-1.486E 03	-1.402E 03	3.034E 03	5.468E 01	8.565E-03	5.468E 01	8.565E-03
5.576E 01	8.426E 00	8.426E 00	3.432E 02	-2.910E 03	-1.499E 03	-1.412E 03	3.069E 03	5.404E 01	8.464E-03	5.404E 01	8.464E-03
5.624E 01	4.075E 00	8.250E 00	4.284E 02	-2.948E 03	-1.519E 03	-1.429E 03	3.102E 03	2.613E 01	4.093E-03	5.291E 01	8.287E-03
5.767E 01	3.968E 00	3.968E 00	4.719E 02	-3.047E 03	-1.572E 03	-1.475E 03	3.209E 03	2.545E 01	3.986E-03	2.545E 01	3.986E-03
5.772E 01	8.325E 00	3.803E 00	4.730E 02	-3.050E 03	-1.574E 03	-1.476E 03	3.217E 03	5.339E 01	8.363E-03	2.439E 01	3.820E-03
5.786E 01	8.325E 00	3.382E 00	4.753E 02	-3.059E 03	-1.579E 03	-1.481E 03	3.234E 03	5.339E 01	8.363E-03	2.169E 01	3.397E-03
5.794E 01	3.141E 00	3.141E 00	4.767E 02	-3.064E 03	-1.581E 03	-1.483E 03	3.245E 03	2.015E 01	3.156E-03	2.015E 01	3.156E-03
5.822E 01	2.300E 00	2.300E 00	4.802E 02	-3.081E 03	-1.591E 03	-1.491E 03	3.280E 03	1.475E 01	2.310E-03	1.475E 01	2.310E-03
5.845E 01	2.080E 00	2.080E 00	4.823E 02	-3.095E 03	-1.598E 03	-1.496E 03	3.309E 03	1.334E 01	2.089E-03	1.334E 01	2.089E-03
5.917E 01	1.375E 00	1.375E 00	4.870E 02	-3.134E 03	-1.621E 03	-1.512E 03	3.402E 03	8.818E 00	1.381E-03	8.818E 00	1.381E-03
6.019E 01	7.475E 00	7.475E 00	4.973E 02	-3.189E 03	-1.651E 03	-1.538E 03	3.532E 03	4.794E 01	7.509E-03	4.794E 01	7.509E-03
6.220E 01	1.051E 01	1.051E 01	4.994E 02	-3.311E 03	-1.702E 03	-1.609E 03	3.790E 03	6.742E 01	1.056E-02	6.742E 01	1.056E-02

XABS	P-IB	P-OB	PDA	GOX	G-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.362E 01	1.121E 01	1.121E 01	4.994E 02	-3.401E 03	-1.737E 03	-1.664E 03	3.972E 03	7.191E 01	1.126E-02	7.191E 01	1.126E-02
6.609E 01	1.123E 01	1.123E 01	4.994E 02	-3.571E 03	-1.804E 03	-1.767E 03	4.289E 03	7.202E 01	1.128E-02	7.202E 01	1.128E-02
6.646E 01	1.123E 01	1.123E 01	4.994E 02	-3.598E 03	-1.815E 03	-1.783E 03	4.337E 03	7.205E 01	1.129E-02	7.204E 01	1.128E-02
6.650E 01	1.123E 01	1.123E 01	4.994E 02	-3.601E 03	-1.816E 03	-1.785E 03	4.342E 03	7.205E 01	1.129E-02	7.204E 01	1.128E-02
6.670E 01	1.060E 01	1.123E 01	4.994E 02	-3.615E 03	-1.822E 03	-1.794E 03	4.368E 03	6.799E 01	1.065E-02	7.205E 01	1.129E-02
6.836E 01	5.345E 00	7.428E 00	5.974E 02	-3.713E 03	-1.860E 03	-1.852E 03	4.584E 03	3.428E 01	5.369E-03	4.764E 01	7.462E-03
6.980E 01	2.335E 00	4.126E 00	8.244E 02	-3.777E 03	-1.883E 03	-1.895E 03	4.761E 03	1.498E 01	2.346E-03	2.646E 01	4.145E-03
7.052E 01	1.813E 00	2.475E 00	8.925E 02	-3.808E 03	-1.891E 03	-1.917E 03	4.849E 03	1.162E 01	1.821E-03	1.587E 01	2.486E-03
7.113E 01	1.370E 00	2.253E 00	9.347E 02	-3.832E 03	-1.897E 03	-1.936E 03	4.923E 03	8.786E 00	1.376E-03	1.445E 01	2.263E-03
7.251E 01	9.400E-01	1.751E 00	1.005E 03	-3.877E 03	-1.907E 03	-1.969E 03	5.089E 03	6.029E 00	9.442E-04	1.123E 01	1.759E-03
7.404E 01	6.577E-01	1.195E 00	1.057E 03	-3.913E 03	-1.917E 03	-1.996E 03	5.273E 03	4.218E 00	6.606E-04	7.664E 00	1.200E-03
7.419E 01	6.300E-01	1.076E 00	1.061E 03	-3.916E 03	-1.917E 03	-1.998E 03	5.291E 03	4.040E 00	6.328E-04	6.900E 00	1.081E-03
7.494E 01	6.967E-01	4.800E-01	1.086E 03	-3.933E 03	-1.921E 03	-2.012E 03	5.375E 03	4.468E 00	6.999E-04	3.078E 00	4.822E-04
7.495E 01	6.971E-01	4.768E-01	1.087E 03	-3.933E 03	-1.921E 03	-2.012E 03	5.375E 03	4.470E 00	7.002E-04	3.058E 00	4.790E-04
7.627E 01	8.150E-01	0.000	1.103E 03	-3.966E 03	-1.927E 03	-2.039E 03	5.427E 03	5.227E 00	8.187E-04	0.000	0.000
7.912E 01	1.105E 00	0.000	1.141E 03	-3.975E 03	-1.936E 03	-2.039E 03	5.525E 03	7.087E 00	1.110E-03	0.000	0.000
8.302E 01	7.000E-01	0.000	1.180E 03	-3.983E 03	-1.944E 03	-2.039E 03	5.630E 03	4.489E 00	7.032E-04	0.000	0.000
8.583E 01	6.850E-01	0.000	1.195E 03	-3.990E 03	-1.950E 03	-2.039E 03	5.685E 03	4.393E 00	6.881E-04	0.000	0.000
8.869E 01	9.150E-01	0.000	1.215E 03	-4.001E 03	-1.962E 03	-2.039E 03	5.707E 03	5.868E 00	9.191E-04	0.000	0.000
8.870E 01	9.155E-01	0.000	1.215E 03	-4.001E 03	-1.962E 03	-2.039E 03	5.707E 03	5.871E 00	9.196E-04	0.000	0.000

ORIGINAL PAGE IS
OF POOR QUALITY

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.373E 01	8.373E 01	2.108E-03	3.481E-02
4.041E 01	1.626E-01	8.389E 01	2.707E-03	3.873E-02
4.073E 01	5.330E 00	8.922E 01	2.362E-03	5.256E-02
4.122E 01	7.910E 00	9.713E 01	2.616E-03	3.772E-02
4.150E 01	4.499E 00	1.016E 02	2.403E-03	4.258E-02
4.246E 01	1.392E 01	1.155E 02	2.633E-03	5.204E-02
4.271E 01	3.557E 00	1.191E 02	3.041E-03	4.766E-02
4.272E 01	1.405E-01	1.192E 02	2.766E-03	5.190E-02
4.278E 01	8.866E-01	1.201E 02	2.778E-03	5.180E-02
4.431E 01	1.792E 01	1.381E 02	3.079E-03	5.639E-02
4.480E 01	4.455E 00	1.425E 02	3.200E-03	5.447E-02
4.550E 01	5.719E 00	1.482E 02	3.201E-03	5.412E-02
4.622E 01	5.334E 00	1.536E 02	3.174E-03	5.448E-02
4.625E 01	2.414E-01	1.538E 02	3.566E-03	4.829E-02
4.626E 01	7.598E-02	1.539E 02	3.267E-03	5.439E-02
4.694E 01	4.742E 00	1.586E 02	3.159E-03	5.693E-02
4.731E 01	2.509E 00	1.611E 02	3.068E-03	5.965E-02
4.811E 01	5.690E 00	1.668E 02	3.037E-03	6.002E-02
4.874E 01	4.208E 00	1.710E 02	3.316E-03	5.167E-02
5.018E 01	1.102E 01	1.821E 02	3.098E-03	4.562E-02
5.019E 01	9.461E-02	1.821E 02	3.241E-03	4.324E-02
5.072E 01	5.407E 00	1.876E 02	3.141E-03	3.134E-02
5.213E 01	1.336E 01	2.009E 02	2.761E-03	2.989E-02
5.423E 01	1.621E 01	2.171E 02	2.775E-03	2.555E-02
5.473E 01	3.566E 00	2.207E 02	2.895E-03	2.405E-02
5.548E 01	5.241E 00	2.259E 02	2.907E-03	2.310E-02
5.576E 01	1.890E 00	2.278E 02	2.956E-03	2.247E-02
5.624E 01	1.563E 00	2.294E 02	2.869E-03	1.734E-02
5.767E 01	4.581E 00	2.340E 02	2.835E-03	1.264E-02
5.772E 01	2.774E-01	2.342E 02	2.656E-03	1.780E-02
5.786E 01	6.900E-01	2.349E 02	2.973E-03	1.591E-02
5.794E 01	4.968E-01	2.354E 02	3.692E-03	8.846E-03
5.822E 01	1.662E 00	2.371E 02	2.308E-03	9.480E-03
5.845E 01	9.842E-01	2.381E 02	2.022E-03	9.375E-03
5.917E 01	2.883E 00	2.410E 02	1.902E-03	7.028E-03
6.019E 01	3.833E 00	2.448E 02	2.181E-03	2.314E-02
6.220E 01	8.561E 00	2.534E 02	3.197E-03	2.086E-02
6.362E 01	7.149E 00	2.605E 02	3.382E-03	2.041E-02
6.609E 01	1.240E 01	2.729E 02	3.436E-03	1.982E-02
6.646E 01	1.753E 00	2.747E 02	3.521E-03	1.896E-02
6.650E 01	1.806E-01	2.748E 02	3.611E-03	1.905E-02
6.670E 01	9.167E-01	2.758E 02	3.605E-03	1.886E-02
6.836E 01	7.641E 00	2.834E 02	3.509E-03	1.452E-02
6.980E 01	5.519E 00	2.889E 02	3.403E-03	9.423E-03
7.052E 01	2.193E 00	2.911E 02	3.341E-03	7.074E-03
7.113E 01	1.592E 00	2.927E 02	3.316E-03	6.262E-03
7.251E 01	3.150E 00	2.959E 02	3.269E-03	5.025E-03
7.404E 01	2.874E 00	2.987E 02	3.212E-03	3.786E-03
7.419E 01	2.331E-01	2.990E 02	3.200E-03	3.555E-03
7.494E 01	9.958E-01	3.000E 02	3.145E-03	2.668E-03
7.495E 01	1.685E-03	3.000E 02	3.145E-03	2.663E-03
7.627E 01	6.002E-01	3.006E 02	3.181E-03	3.420E-03
7.912E 01	1.377E 00	3.019E 02	3.206E-03	4.285E-03
8.302E 01	1.402E 00	3.033E 02	3.124E-03	3.005E-03
8.583E 01	6.199E-01	3.040E 02	3.106E-03	2.941E-03
8.869E 01	2.799E-01	3.042E 02	3.132E-03	3.654E-03

READING = 0089 BLOCK = 143 TIME = 316.473 MACH 7.3 PT = 995.499 TT = 2722.9

X	DDRAG	CDRAG	CF	HC
8.870E 01	0.000	3.042E 02	3.132E-03	3.655E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	903.	(LBF)
MEASURED THRUST	1024.	(LBF)
CALCULATED SPECIFIC IMPULSE	2083.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2364.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.6077	
MEASURED THRUST COEFFICIENT	0.6898	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3990.	(LBF)
NET THRUST	1009.	(LBF)
SPECIFIC IMPULSE	2329.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.6797	

MOMENTUM AND FORCES

INLET FRICTION DRAG	83.7	(LBF)
INLET MOMENTUM CHANGE	-416.0	(LBF)
COMBUSTOR FRICTION DRAG	190.9	(LBF)
COMBUSTOR STRUT DRAG	-30.94	(LBF)
COMBUSTOR MOMENTUM CHANGE	633.	(LBF)
NOZZLE FRICTION DRAG	29.57	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	686.	(LBF)
NOZZLE PRESSURE INTEGRAL	715.	(LBF)
EXTERNAL FRICTION DRAG	72.05	(LBF)
EXTERNAL PRESSURE INTEGRAL	-683.	(LBF)
TOTAL EXTERNAL DRAG	-755.	(LBF)
TOTAL STRUT DRAG	-30.94	(LBF)
CAVITY FORCE	-636.	(LBF)
CALCULATED LOAD CELL FORCE	-488.	(LBF)
MEASURED LOAD CELL FORCE	-367.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, -154.4, -124.8,

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7230	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.607	(IN)
NOZZLE SHROUD TRAILING EDGE	74.947	(IN)
NOZZLE PLUG TRAILING EDGE	88.699	(IN)
STRUT LEADING EDGE	57.863	(IN)
STRUT TRAILING EDGE	66.463	(IN)
COMBUSTOR EXIT	66.463	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9901	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1033	
DELTA PT2	0.0924	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3335	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1046	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9083	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9162	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9241	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8760	
ENTHALPY AT PO - SUPERSONIC	-49.01	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-17.52	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0262
EQUIVALENCE RATIO	0.832
COMBUSTOR EFFICIENCY	0.946
TOTAL PRESSURE RATIO	0.0771
COMBUSTOR EFFECTIVENESS	0.8316

INJECTOR DISCHARGE COEFFICIENTS 0.9647, 0.4742, 1.0235, 0.8134

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9370
NOZZLE COEFFICIENT - CT	0.8525
PROCESS EFFICIENCY	0.8295
KINETIC ENERGY EFFICIENCY	0.8574

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.708	B
1C	44.300	
2A	50.183	D
2C	46.250	E
3A	55.473	
3B	57.658	
4	46.208	

Reading 89

t = 327.27 sec.

Recomputations with surface pressure substitutions.

3/6/75

READING = 0089 BLOCK = 155 TIME = 327.273 MACH 7.3 PT = 994.999 TT = 2408.1

RAMJET PERFORMANCE

SUMMARY REPORT

Input pressure channel 123, 206, 270, 273

	P	T	H		GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
WIND TUNNEL		1	0 5															
0.000	994.999	2408	495.0(	623)	1.3121	28.909	2331											
0.000	0.157	221	-76.2(	53)	1.3930	28.908	728	7.340	5346	1.743	0.07087	17.976	0.9904	3027	5.888	168.4		
SPIKE TIP NS		2	0 5															
0.600	11.162	2408	495.0(	623)	1.3122	28.908	2331											
0.600	10.161	2355	479.6(	608)	1.3140	28.908	2307	0.381	878	2.052	0.07087	17.976	0.9904	3068	0.967	170.7		
WIND TUNNEL		3	0 0															
0.000	994.999	2408	495.0(	623)	1.3121	28.909	2331											
0.000	0.161	223	-75.8(	53)	1.3931	28.908	731	7.314	5344	1.743	0.07204	18.273	0.9904	3076	5.983	168.3		
SPIKE TIP NS		4	0 0															
0.600	11.162	2408	495.0(	623)	1.3122	28.908	2331											
0.600	10.123	2353	479.0(	607)	1.3140	28.908	2306	0.388	895	2.052	0.07204	18.273	0.9904	3076	1.002	168.3		
INLET THROAT		5	0 5															
40.400	331.827	2318	469.0(	598)	1.3151	28.908	2290											
40.400	10.547	951	101.3(	230)	1.3818	28.908	1504	2.853	4290	1.807	0.88956	17.976	0.0789	2610	59.302	145.2		
INLET UPNRSK		6	0 3															
40.400	331.827	2318	469.0(	598)	1.3151	28.908	2290											
40.400	9.082	913	91.7(	221)	1.3840	28.908	1474	2.948	4345	1.807	0.80869	17.976	0.0868	2630	54.609	146.3		
INLET DNNRSK		7	0 4															
40.400	105.783	2318	469.0(	598)	1.3152	28.908	2290											
40.400	91.778	2240	446.8(	575)	1.3178	28.908	2253	0.468	1055	1.886	0.80869	17.976	0.0868	2630	13.261	146.3		
COMBUSTOR	0	8	1 5															
40.410	187.486	2451	478.8(	676)	1.3111	27.174	2425											
40.410	16.915	1343	153.1(	351)	1.3580	27.173	1826	2.210	4037	1.967	0.89429	18.074	0.0789	2610	56.103	144.4	0.17	0.22
COMBUSTOR	0	9	2 4															
40.731	153.911	2614	476.4(	724)	1.3036	27.356	2489											
40.731	21.043	1609	176.0(	425)	1.3416	27.356	1981	1.957	3877	1.995	0.89759	18.074	0.0786	2602	54.081	143.9	0.17	0.40
COMBUSTOR	0	10	3 21															
41.221	209.466	2282	472.6(	627)	1.3185	27.018	2353											
41.221	12.841	1115	135.6(	290)	1.3729	27.017	1678	2.447	4106	1.940	0.89082	18.074	0.0792	2567	56.849	142.0	0.17	0.06
COMBUSTOR	0	11	4 21															
41.500	201.476	2227	470.4(	611)	1.3210	26.968	2329											
41.500	13.812	1117	150.6(	291)	1.3732	26.968	1682	2.378	4000	1.936	0.88195	18.074	0.0800	2530	54.828	140.0	0.17	0.01
COMBUSTOR	0	12	5 4															
42.460	105.998	2381	461.7(	655)	1.3136	27.158	2393											
42.460	23.403	1640	241.6(	435)	1.3419	27.158	2007	1.653	3318	2.000	0.83219	18.074	0.0848	2373	42.918	131.3	0.17	0.20
COMBUSTOR	0	13	6 8															
42.706	99.627	2222	465.2(	631)	1.3220	25.994	2370											
42.706	23.770	1551	260.4(	427)	1.3491	25.993	2000	1.600	3201	2.048	0.82542	18.133	0.0858	2326	41.061	128.3	0.28	0.05
COMBUSTOR	0	14	7 2															
42.716	99.332	2220	465.1(	631)	1.3220	25.992	2369											
42.716	23.785	1551	260.9(	427)	1.3491	25.992	2000	1.598	3196	2.048	0.82467	18.133	0.0858	2324	40.965	128.2	0.28	0.05
COMBUSTOR	0	15	8 3															
42.781	97.655	2206	464.5(	627)	1.3226	25.981	2363											
42.781	23.882	1549	264.0(	427)	1.3493	25.981	2000	1.584	3167	2.048	0.82111	18.133	0.0862	2312	40.416	127.5	0.28	0.04
COMBUSTOR	0	16	9 3															
44.310	70.950	2136	448.9(	605)	1.3254	25.960	2328											
44.310	38.747	1838	357.0(	513)	1.3364	25.960	2169	0.989	2144	2.062	0.75938	18.133	0.0932	2133	25.299	117.7	0.28	0.03
COMBUSTOR	0	17	10 21															
44.800	68.793	2084	444.0(	589)	1.3276	25.924	2303											
44.800	43.511	1859	374.9(	520)	1.3360	25.924	2182	0.852	1861	2.058	0.75038	18.133	0.0943	2100	21.697	115.8	0.28	0.00
COMBUSTOR	0	18	11 21															
45.501	67.897	2057	437.3(	581)	1.3287	25.919	2289											
45.501	47.653	1883	383.9(	528)	1.3351	25.919	2196	0.745	1635	2.054	0.74568	18.133	0.0949	2081	18.952	114.7	0.28	0.00

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.216	68.705	2034	430.5(574)	1.3295	25.918	2277											
46.216	49.033	1869	380.0(524)	1.3356	25.918	2188	0.726	1589	2.050	0.72515	18.133	0.0976	2122	17.907	117.0	0.28	0.00
COMBUSTOR	0	20	13 21														
46.250	64.849	2063	448.2(639)	1.3311	23.567	2407											
46.250	49.099	1924	401.4(593)	1.3362	23.567	2329	0.657	1530	2.219	0.72982	18.294	0.0979	2100	17.349	114.8	0.56	0.04
COMBUSTOR	0	21	14 21														
46.260	65.649	1975	448.1(611)	1.3352	23.491	2363											
46.260	49.118	1836	401.3(564)	1.3406	23.491	2282	0.670	1530	2.205	0.72937	18.294	0.0979	2102	17.338	114.9	0.56	0.01
COMBUSTOR	0	22	15 21														
46.941	67.658	1943	441.5(600)	1.3366	23.480	2345											
46.941	50.432	1804	395.0(554)	1.3420	23.480	2264	0.674	1527	2.197	0.69436	18.294	0.1029	2197	16.474	120.1	0.56	0.00
COMBUSTOR	0	23	16 3														
47.310	68.429	1978	438.0(611)	1.3348	23.519	2362											
47.310	48.519	1813	382.9(556)	1.3411	23.519	2267	0.732	1660	2.202	0.67590	18.294	0.1057	2257	17.434	123.4	0.56	0.02
COMBUSTOR	0	24	17 5														
48.110	66.548	2357	430.3(735)	1.3167	23.878	2542											
48.110	44.965	2143	356.9(662)	1.3243	23.878	2431	0.788	1916	2.253	0.62132	18.294	0.1150	2413	18.502	131.9	0.56	0.17
COMBUSTOR	0	25	18 4														
48.741	66.354	2446	424.2(764)	1.3124	23.977	2580											
48.741	50.000	2286	368.8(709)	1.3179	23.977	2499	0.667	1666	2.262	0.56555	18.294	0.1263	2565	14.644	140.2	0.56	0.21
COMBUSTOR	0	26	19 4														
50.181	58.208	3015	426.8(1019)	1.2876	22.906	2903											
50.181	23.049	2437	208.4(804)	1.3074	22.906	2630	1.257	3306	2.453	0.46340	18.421	0.1552	2809	23.809	152.5	0.79	0.35
COMBUSTOR	0	27	20 2														
50.191	58.256	3012	426.8(1018)	1.2878	22.903	2902											
50.191	22.862	2430	206.6(801)	1.3077	22.904	2626	1.264	3319	2.453	0.46280	18.421	0.1554	2810	23.871	152.6	0.79	0.35
COMBUSTOR	0	28	21 5														
50.721	69.942	2649	423.4(888)	1.3045	22.579	2759											
50.721	12.942	1758	99.9(566)	1.3377	22.579	2275	1.768	4024	2.404	0.43283	18.421	0.1662	2855	27.065	155.0	0.79	0.24
COMBUSTOR	0	29	22 4														
52.131	62.280	2778	415.5(934)	1.2983	22.714	2810											
52.131	11.112	1837	71.4(592)	1.3327	22.715	2315	1.792	4149	2.426	0.36889	18.421	0.1950	2931	23.787	159.1	0.79	0.29
COMBUSTOR	0	30	23 5														
54.231	51.257	3010	403.8(1020)	1.2871	22.881	2901											
54.231	9.925	2052	46.4(666)	1.3210	22.882	2427	1.743	4229	2.468	0.30292	18.456	0.2379	3031	19.910	164.2	0.80	0.36
COMBUSTOR	0	31	24 3														
54.731	50.599	3022	401.4(1024)	1.2865	22.898	2905											
54.731	9.300	2035	33.5(660)	1.3214	22.899	2416	1.776	4291	2.470	0.29054	18.456	0.2480	3052	19.375	165.4	0.80	0.37
COMBUSTOR	0	32	25 4														
55.481	47.900	3096	397.8(1051)	1.2828	22.977	2931											
55.481	8.952	2101	24.5(682)	1.3179	22.979	2447	1.766	4322	2.480	0.27388	18.456	0.2631	3082	18.395	167.0	0.80	0.39
COMBUSTOR	0	33	26 4														
55.760	47.014	3121	396.4(1060)	1.2815	23.005	2940											
55.760	8.823	2123	21.1(689)	1.3167	23.007	2458	1.763	4334	2.483	0.26820	18.456	0.2687	3093	18.064	167.6	0.80	0.40
COMBUSTOR	0	34	27 4														
56.241	40.981	3212	394.2(1093)	1.2768	23.098	2971											
56.241	6.575	2113	-20.4(684)	1.3159	23.101	2446	1.862	4554	2.501	0.21188	18.456	0.3401	3185	14.997	172.6	0.80	0.43
COMBUSTOR	0	35	28 6														
57.666	28.752	4107	387.6(1423)	1.2202	24.043	3219											
57.666	11.425	3450	100.0(1165)	1.2524	24.094	2986	1.271	3794	2.579	0.19591	18.456	0.3678	3252	11.550	176.2	0.80	0.73
COMBUSTOR	0	36	29 4														
57.721	28.496	4146	387.4(1438)	1.2171	24.086	3227											
57.721	11.742	3514	107.8(1189)	1.2487	24.143	3006	1.244	3740	2.581	0.19525	18.456	0.3691	3255	11.349	176.4	0.80	0.74
COMBUSTOR	0	37	30 4														
57.861	28.275	4180	386.7(1450)	1.2142	24.127	3234											
57.861	11.881	3564	110.7(1207)	1.2456	24.188	3021	1.230	3716	2.583	0.19392	18.456	0.3716	3262	11.199	176.8	0.80	0.75

ORIGINAL PAGE IS
OF POOR QUALITY

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                   P     T     H              GAMMA  MOLWT SONV  MACH  VEL   S      W/A      W     A/AC    MOMTM   Q     IVAC  PHI  ETAC
COMBUSTOR          0    38   31    4
57.941       28.658 4187   386.3(1453) 1.2138 24.135 3236
57.941       11.970 3566   108.2(1208) 1.2454 24.197 3021 1.235 3730 2.582 0.19609 18.456 0.3675   3266 11.367 177.0 0.80 0.76
COMBUSTOR          0    39   32    4
58.221       28.479 4264   385.0(1482) 1.2074 24.225 3251
58.221       12.525 3683   117.8(1251) 1.2379 24.298 3054 1.197 3656 2.584 0.19554 18.456 0.3685   3280 11.111 177.7 0.80 0.79
COMBUSTOR          0    40   33    4
58.447       28.360 4320   383.8(1503) 1.2026 24.291 3261
58.447       12.953 3769   125.1(1284) 1.2320 24.374 3078 1.169 3598 2.586 0.19504 18.456 0.3695   3290 10.906 178.3 0.80 0.81
COMBUSTOR          0    41   34    4
59.171       27.896 4474   380.1(1560) 1.1887 24.476 3287
59.171       14.325 4020   150.9(1378) 1.2132 24.585 3141 1.079 3387 2.591 0.19201 18.456 0.3753   3320 10.107 179.9 0.80 0.88
COMBUSTOR          0    42   35    4
60.191       27.898 4566   374.9(1595) 1.1801 24.597 3300
60.191       16.400 4216   186.9(1453) 1.1981 24.710 3188 0.962 3067 2.592 0.19079 18.456 0.3777   3346  9.094 181.3 0.80 0.93
COMBUSTOR          0    43   36    4
62.201       28.785 4513   364.8(1574) 1.1851 24.564 3290
62.201       17.550 4182   191.1(1441) 1.2024 24.659 3184 0.926 2948 2.587 0.19743 18.456 0.3650   3332  9.045 180.5 0.80 0.91
COMBUSTOR          0    44   37    4
63.621       29.534 4461   358.1(1554) 1.1900 24.521 3281
63.621       14.587 3979   117.4(1361) 1.2160 24.630 3125 1.110 3470 2.582 0.20278 18.456 0.3553   3318 10.935 179.8 0.80 0.89
COMBUSTOR          0    45   38    4
66.085       28.152 4317   346.7(1499) 1.2016 24.388 3252
66.085       12.361 3741    77.1(1271) 1.2324 24.474 3060 1.200 3673 2.580 0.19221 18.456 0.3749   3294 10.972 178.5 0.80 0.84
COMBUSTOR          0    46   39    3
66.461       25.993 4338   345.0(1507) 1.1986 24.417 3254
66.461       11.913 3797    87.3(1292) 1.2282 24.508 3076 1.168 3591 2.587 0.17869 18.456 0.4032   3290  9.972 178.3 0.80 0.85
COMBUSTOR  REGEN   47   40   21
66.461       25.993 4553   469.5(1595) 1.1833 24.328 3318
66.461       15.632 4213   287.7(1457) 1.2009 24.431 3209 0.940 3015 2.615 0.17869 18.456 0.4032   3344  8.374 181.2 0.80 0.85
NOZZLE  AE         48   41    5
88.697       25.993 4338   345.0(1470) 1.1986 24.417 3254
88.697        0.730 2108  -568.6( 660) 1.2992 24.548 2355 2.871 6761 2.587 0.03720 18.456 1.9371   4241  3.909 229.8 0.80 0.85
NOZZLE  PO         49   42    5
88.697       25.993 4338   345.0(1470) 1.1986 24.417 3254
88.697        0.157 1459  -788.6( 441) 1.3313 24.548 1983 3.798 7531 2.587 0.01287 18.456 5.5995   4545  1.506 246.3 0.80 0.85
NOZZLE  AE REGEN   50   43    5
88.697       25.993 4553   469.5(1595) 1.1833 24.328 3318
88.697        0.781 2316  -494.7( 734) 1.2910 24.548 2461 2.823 6946 2.615 0.03720 18.456 1.9371   4372  4.015 236.9 0.80 0.85
NOZZLE  PO REGEN   51   44    5
88.697       25.993 4553   469.5(1595) 1.1833 24.328 3318
88.697        0.157 1589  -746.0( 483) 1.3238 24.548 2064 3.779 7799 2.615 0.01224 18.456 5.8891   4710  1.483 255.2 0.80 0.85
FICTIVE COMBUSTR   69   62    0
66.461      331.827 4811   345.0(1687) 1.1966 24.958 3387
66.461        0.157  892-1159.5( 259) 1.3612 25.116 1550 5.597 8676 2.388 0.02481 18.456 2.9047   5094  3.345 276.0 0.80 1.00
FICTIVE NOZZLE     70   63    0
88.697       17.089 4274   318.7(1482) 1.1975 24.416 3228
88.697        0.889 2385  -469.9( 759) 1.2884 24.548 2495 2.518 6282 2.615 0.03720 18.456 1.9371   4045  3.631 219.1 0.80 0.85
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XABS	P-IB	P-OB	PDA	GOX	G-IB	G-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.693E-01	0.000	0.000	0.000	2.470E-02	4.398E 00	6.935E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.295E 01	0.000	0.000	0.000	1.634E 02	4.398E 00	6.935E-04	0.000	0.000
3.070E 01	1.135E 00	0.000	-9.694E 01	0.000	0.000	0.000	5.053E 02	7.234E 00	1.141E-03	0.000	0.000
3.508E 01	1.998E 00	0.000	-1.985E 02	0.000	0.000	0.000	6.804E 02	1.274E 01	2.008E-03	0.000	0.000
3.555E 01	2.150E 00	0.000	-2.174E 02	0.000	0.000	0.000	7.013E 02	1.370E 01	2.161E-03	0.000	0.000
3.606E 01	2.110E 00	0.000	-2.390E 02	-2.115E 02	-2.115E 02	0.000	7.246E 02	1.345E 01	2.121E-03	0.000	0.000
3.648E 01	2.283E 00	0.000	-2.578E 02	-2.167E 02	-2.167E 02	0.000	7.443E 02	1.455E 01	2.295E-03	0.000	0.000
3.660E 01	2.295E 00	3.034E 00	-2.949E 02	-2.182E 02	-2.182E 02	0.000	7.499E 02	1.463E 01	2.306E-03	1.934E 01	3.050E-03
3.660E 01	2.295E 00	3.055E 00	-2.949E 02	-2.182E 02	-2.182E 02	0.000	7.502E 02	1.463E 01	2.307E-03	1.947E 01	3.070E-03
3.701E 01	2.335E 00	4.420E 00	-2.970E 02	-2.235E 02	-2.235E 02	0.000	7.922E 02	1.488E 01	2.347E-03	2.817E 01	4.442E-03
3.727E 01	2.249E 00	5.300E 00	-2.959E 02	-2.269E 02	-2.269E 02	0.000	8.196E 02	1.434E 01	2.261E-03	3.378E 01	5.327E-03
3.803E 01	2.000E 00	8.267E 00	-2.780E 02	-2.377E 02	-2.377E 02	0.000	9.012E 02	1.275E 01	2.010E-03	5.269E 01	8.308E-03
3.873E 01	6.621E 00	1.101E 01	-2.773E 02	-2.927E 02	-2.559E 02	-3.685E 01	9.794E 02	4.220E 01	6.654E-03	7.015E 01	1.106E-02
3.875E 01	6.746E 00	1.100E 01	-2.776E 02	-2.941E 02	-2.566E 02	-3.750E 01	9.815E 02	4.300E 01	6.780E-03	7.008E 01	1.105E-02
3.901E 01	6.460E 00	1.085E 01	-2.827E 02	-3.139E 02	-2.676E 02	-4.635E 01	1.011E 03	5.392E 01	8.503E-03	6.914E 01	1.090E-02
3.950E 01	1.180E 01	1.057E 01	-2.989E 02	-3.586E 02	-2.957E 02	-6.294E 01	1.067E 03	7.524E 01	1.186E-02	6.736E 01	1.062E-02
3.975E 01	1.361E 01	1.042E 01	-3.086E 02	-3.855E 02	-3.141E 02	-7.139E 01	1.096E 03	8.676E 01	1.368E-02	6.645E 01	1.048E-02
4.000E 01	1.541E 01	1.129E 01	-3.173E 02	-4.150E 02	-3.353E 02	-7.975E 01	1.125E 03	9.820E 01	1.548E-02	7.198E 01	1.135E-02
4.022E 01	1.691E 01	1.206E 01	-3.263E 02	-4.430E 02	-3.558E 02	-8.715E 01	1.151E 03	1.078E 02	1.699E-02	7.688E 01	1.212E-02
4.040E 01	1.812E 01	1.545E 01	-3.317E 02	-4.662E 02	-3.731E 02	-9.313E 01	1.171E 03	1.155E 02	1.821E-02	9.849E 01	1.553E-02
4.041E 01	1.819E 01	1.564E 01	-3.318E 02	-4.675E 02	-3.740E 02	-9.346E 01	1.173E 03	1.159E 02	1.828E-02	9.970E 01	1.572E-02
4.073E 01	2.037E 01	2.172E 01	-3.344E 02	-5.102E 02	-4.061E 02	-1.041E 02	1.210E 03	1.298E 02	2.047E-02	1.384E 02	2.183E-02
4.122E 01	2.369E 01	1.987E 00	-3.606E 02	-5.784E 02	-4.583E 02	-1.201E 02	1.268E 03	1.510E 02	2.381E-02	1.267E 01	1.997E-03
4.150E 01	2.559E 01	2.037E 00	-3.932E 02	-6.190E 02	-4.899E 02	-1.290E 02	1.301E 03	1.631E 02	2.572E-02	1.298E 01	2.047E-03
4.246E 01	4.460E 01	2.206E 00	-5.373E 02	-7.774E 02	-6.016E 02	-1.757E 02	1.415E 03	2.843E 02	4.482E-02	1.406E 01	2.217E-03
4.271E 01	4.529E 01	2.249E 00	-5.801E 02	-8.225E 02	-6.296E 02	-1.929E 02	1.444E 03	2.887E 02	4.552E-02	1.434E 01	2.261E-03
4.272E 01	4.532E 01	2.251E 00	-5.817E 02	-8.243E 02	-6.307E 02	-1.936E 02	1.445E 03	2.889E 02	4.555E-02	1.435E 01	2.262E-03
4.278E 01	4.550E 01	2.262E 00	-5.929E 02	-8.363E 02	-6.378E 02	-1.985E 02	1.453E 03	2.900E 02	4.573E-02	1.442E 01	2.274E-03
4.431E 01	4.980E 01	2.770E 01	-7.545E 02	-1.119E 03	-7.784E 02	-3.402E 02	1.637E 03	3.174E 02	5.005E-02	1.765E 02	2.784E-02
4.480E 01	5.117E 01	3.585E 01	-7.836E 02	-1.206E 03	-8.125E 02	-3.938E 02	1.697E 03	3.262E 02	5.143E-02	2.285E 02	3.603E-02
4.550E 01	4.780E 01	4.751E 01	-7.977E 02	-1.328E 03	-8.572E 02	-4.706E 02	1.783E 03	3.047E 02	4.804E-02	3.028E 02	4.774E-02
4.622E 01	4.436E 01	5.371E 01	-7.515E 02	-1.452E 03	-9.020E 02	-5.501E 02	1.870E 03	2.827E 02	4.458E-02	3.423E 02	5.398E-02
4.625E 01	4.419E 01	5.401E 01	-7.476E 02	-1.458E 03	-9.042E 02	-5.539E 02	1.874E 03	2.817E 02	4.441E-02	3.442E 02	5.428E-02
4.626E 01	4.414E 01	5.409E 01	-7.463E 02	-1.460E 03	-9.048E 02	-5.550E 02	1.875E 03	2.814E 02	4.437E-02	3.448E 02	5.436E-02
4.694E 01	4.086E 01	6.000E 01	-6.465E 02	-1.579E 03	-9.469E 02	-6.325E 02	1.959E 03	2.605E 02	4.107E-02	3.824E 02	6.030E-02
4.731E 01	3.909E 01	5.795E 01	-5.840E 02	-1.645E 03	-9.695E 02	-6.751E 02	2.005E 03	2.491E 02	3.928E-02	3.694E 02	5.824E-02
4.811E 01	3.642E 01	5.351E 01	-4.222E 02	-1.786E 03	-1.018E 03	-7.675E 02	2.104E 03	2.322E 02	3.661E-02	3.410E 02	5.377E-02
4.874E 01	5.000E 01	5.000E 01	-2.669E 02	-1.896E 03	-1.056E 03	-8.407E 02	2.183E 03	3.187E 02	5.025E-02	3.187E 02	5.025E-02
5.018E 01	2.305E 01	2.305E 01	4.206E 00	-2.113E 03	-1.140E 03	-9.726E 02	2.363E 03	1.469E 02	2.316E-02	1.469E 02	2.316E-02
5.019E 01	2.286E 01	2.286E 01	5.405E 00	-2.114E 03	-1.141E 03	-9.732E 02	2.364E 03	1.457E 02	2.298E-02	1.457E 02	2.298E-02
5.072E 01	1.294E 01	1.294E 01	5.486E 01	-2.175E 03	-1.171E 03	-1.004E 03	2.430E 03	8.249E 01	1.301E-02	8.249E 01	1.301E-02
5.213E 01	1.111E 01	1.111E 01	1.438E 02	-2.321E 03	-1.250E 03	-1.071E 03	2.608E 03	7.083E 01	1.117E-02	7.083E 01	1.117E-02
5.423E 01	9.925E 00	9.925E 00	2.596E 02	-2.521E 03	-1.364E 03	-1.157E 03	2.874E 03	6.326E 01	9.975E-03	6.326E 01	9.975E-03
5.473E 01	9.300E 00	9.300E 00	2.846E 02	-2.566E 03	-1.391E 03	-1.175E 03	2.938E 03	5.928E 01	9.347E-03	5.928E 01	9.347E-03
5.548E 01	8.952E 00	8.952E 00	3.199E 02	-2.633E 03	-1.430E 03	-1.203E 03	3.034E 03	5.706E 01	8.997E-03	5.706E 01	8.997E-03
5.576E 01	8.823E 00	8.823E 00	3.326E 02	-2.658E 03	-1.444E 03	-1.214E 03	3.069E 03	5.624E 01	8.867E-03	5.624E 01	8.867E-03
5.624E 01	4.550E 00	8.600E 00	4.262E 02	-2.700E 03	-1.466E 03	-1.234E 03	3.102E 03	2.900E 01	4.573E-03	5.482E 01	8.643E-03
5.767E 01	1.142E 01	1.142E 01	4.974E 02	-2.821E 03	-1.524E 03	-1.297E 03	3.209E 03	7.282E 01	1.148E-02	7.282E 01	1.148E-02
5.772E 01	1.195E 01	1.153E 01	5.007E 02	-2.826E 03	-1.526E 03	-1.300E 03	3.217E 03	7.617E 01	1.201E-02	7.352E 01	1.159E-02
5.786E 01	1.195E 01	1.181E 01	5.083E 02	-2.838E 03	-1.531E 03	-1.307E 03	3.234E 03	7.617E 01	1.201E-02	7.528E 01	1.187E-02
5.794E 01	1.197E 01	1.197E 01	5.131E 02	-2.845E 03	-1.534E 03	-1.311E 03	3.245E 03	7.629E 01	1.203E-02	7.629E 01	1.203E-02
5.822E 01	1.252E 01	1.252E 01	5.291E 02	-2.870E 03	-1.545E 03	-1.325E 03	3.280E 03	7.983E 01	1.259E-02	7.983E 01	1.259E-02
5.845E 01	1.295E 01	1.295E 01	5.415E 02	-2.891E 03	-1.554E 03	-1.337E 03	3.309E 03	8.256E 01	1.302E-02	8.256E 01	1.302E-02
5.917E 01	1.432E 01	1.432E 01	5.784E 02	-2.959E 03	-1.581E 03	-1.378E 03	3.402E 03	9.131E 01	1.440E-02	9.131E 01	1.440E-02
6.019E 01	1.640E 01	1.640E 01	6.140E 02	-3.056E 03	-1.618E 03	-1.438E 03	3.532E 03	1.045E 02	1.648E-02	1.045E 02	1.648E-02
6.220E 01	1.755E 01	1.755E 01	6.180E 02	-3.242E 03	-1.686E 03	-1.556E 03	3.790E 03	1.119E 02	1.764E-02	1.119E 02	1.764E-02

READING = 0089 BLOCK = 155 TIME = 327.273 MACH 7.3 PT = 994.999 TT = 2408.1

XABS	P-IB	P-OB	PDA	QUX	Q-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.362E 01	1.459E 01	1.459E 01	6.180E 02	-3.366E 03	-1.734E 03	-1.632E 03	3.972E 03	9.298E 01	1.466E-02	9.298E 01	1.466E-02
6.608E 01	1.236E 01	1.236E 01	6.180E 02	-3.576E 03	-1.823E 03	-1.753E 03	4.289E 03	7.879E 01	1.242E-02	7.879E 01	1.242E-02
6.646E 01	1.180E 01	1.202E 01	6.180E 02	-3.608E 03	-1.837E 03	-1.771E 03	4.337E 03	7.524E 01	1.186E-02	7.663E 01	1.208E-02
6.650E 01	1.180E 01	1.199E 01	6.180E 02	-3.611E 03	-1.838E 03	-1.773E 03	4.342E 03	7.524E 01	1.186E-02	7.639E 01	1.205E-02
6.670E 01	1.112E 01	1.180E 01	6.180E 02	-3.628E 03	-1.846E 03	-1.782E 03	4.368E 03	7.086E 01	1.117E-02	7.524E 01	1.186E-02
6.836E 01	5.405E 00	7.933E 00	7.209E 02	-3.738E 03	-1.895E 03	-1.843E 03	4.584E 03	3.445E 01	5.432E-03	5.056E 01	7.973E-03
6.980E 01	2.550E 00	4.574E 00	9.620E 02	-3.809E 03	-1.922E 03	-1.887E 03	4.761E 03	1.625E 01	2.563E-03	2.916E 01	4.597E-03
7.052E 01	1.933E 00	2.895E 00	1.037E 03	-3.843E 03	-1.932E 03	-1.911E 03	4.849E 03	1.232E 01	1.943E-03	1.845E 01	2.910E-03
7.113E 01	1.410E 00	2.643E 00	1.084E 03	-3.872E 03	-1.940E 03	-1.932E 03	4.923E 03	8.987E 00	1.417E-03	1.685E 01	2.656E-03
7.251E 01	1.235E 00	2.072E 00	1.166E 03	-3.927E 03	-1.955E 03	-1.972E 03	5.089E 03	7.872E 00	1.241E-03	1.321E 01	2.083E-03
7.404E 01	7.068E-01	1.440E 00	1.229E 03	-3.973E 03	-1.968E 03	-2.005E 03	5.273E 03	4.505E 00	7.103E-04	9.178E 00	1.447E-03
7.419E 01	6.550E-01	1.269E 00	1.234E 03	-3.977E 03	-1.970E 03	-2.007E 03	5.291E 03	4.175E 00	6.583E-04	8.089E 00	1.276E-03
7.494E 01	7.668E-01	4.150E-01	1.260E 03	-3.998E 03	-1.975E 03	-2.023E 03	5.375E 03	4.887E 00	7.706E-04	2.645E 00	4.171E-04
7.494E 01	7.674E-01	4.104E-01	1.261E 03	-3.999E 03	-1.975E 03	-2.023E 03	5.375E 03	4.891E 00	7.712E-04	2.616E 00	4.125E-04
7.627E 01	9.650E-01	0.000	1.280E 03	-4.040E 03	-1.983E 03	-2.057E 03	5.427E 03	6.151E 00	9.698E-04	0.000	0.000
7.912E 01	1.155E 00	0.000	1.322E 03	-4.054E 03	-1.997E 03	-2.057E 03	5.525E 03	7.362E 00	1.161E-03	0.000	0.000
8.302E 01	7.400E-01	0.000	1.362E 03	-4.066E 03	-2.009E 03	-2.057E 03	5.630E 03	4.717E 00	7.437E-04	0.000	0.000
8.583E 01	8.200E-01	0.000	1.380E 03	-4.076E 03	-2.019E 03	-2.057E 03	5.685E 03	5.227E 00	8.241E-04	0.000	0.000
8.869E 01	1.065E 00	0.000	1.403E 03	-4.093E 03	-2.036E 03	-2.057E 03	5.707E 03	6.788E 00	1.070E-03	0.000	0.000
8.870E 01	1.066E 00	0.000	1.403E 03	-4.093E 03	-2.036E 03	-2.057E 03	5.707E 03	6.791E 00	1.071E-03	0.000	0.000

READING = 0089 BLOCK = 155 TIME = 327.273 MACH 7.3 PT = 994.999 TT = 2408.1

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.556E 01	8.556E 01	2.021E-03	3.570E-02
4.041E 01	1.587E-01	8.571E 01	2.667E-03	4.566E-02
4.073E 01	5.305E 00	9.102E 01	2.459E-03	5.610E-02
4.122E 01	8.126E 00	9.914E 01	2.628E-03	3.798E-02
4.150E 01	4.563E 00	1.037E 02	2.334E-03	4.281E-02
4.246E 01	1.369E 01	1.174E 02	2.579E-03	5.541E-02
4.271E 01	3.446E 00	1.208E 02	3.004E-03	4.977E-02
4.272E 01	1.375E-01	1.210E 02	2.720E-03	5.442E-02
4.278E 01	8.644E-01	1.219E 02	2.733E-03	5.415E-02
4.431E 01	1.743E 01	1.393E 02	3.024E-03	5.677E-02
4.480E 01	4.280E 00	1.436E 02	3.095E-03	5.568E-02
4.550E 01	5.414E 00	1.490E 02	3.133E-03	5.445E-02
4.622E 01	5.041E 00	1.540E 02	3.113E-03	5.453E-02
4.625E 01	2.424E-01	1.543E 02	3.526E-03	4.765E-02
4.626E 01	7.622E-02	1.543E 02	3.526E-03	4.765E-02
4.694E 01	4.705E 00	1.590E 02	3.113E-03	5.612E-02
4.731E 01	2.380E 00	1.614E 02	3.035E-03	5.851E-02
4.811E 01	5.301E 00	1.667E 02	2.918E-03	6.102E-02
4.874E 01	3.959E 00	1.707E 02	3.169E-03	5.301E-02
5.018E 01	1.071E 01	1.814E 02	3.025E-03	4.570E-02
5.019E 01	9.167E-02	1.815E 02	3.121E-03	4.398E-02
5.072E 01	5.195E 00	1.867E 02	3.015E-03	3.250E-02
5.213E 01	1.285E 01	1.995E 02	2.677E-03	3.113E-02
5.423E 01	1.567E 01	2.152E 02	2.710E-03	2.715E-02
5.473E 01	3.480E 00	2.187E 02	2.850E-03	2.467E-02
5.548E 01	5.139E 00	2.238E 02	2.830E-03	2.379E-02
5.576E 01	1.856E 00	2.257E 02	2.872E-03	2.313E-02
5.624E 01	1.515E 00	2.272E 02	2.781E-03	1.814E-02
5.767E 01	4.090E 00	2.313E 02	2.943E-03	2.358E-02
5.772E 01	2.538E-01	2.315E 02	3.350E-03	2.073E-02
5.786E 01	6.727E-01	2.322E 02	3.365E-03	2.069E-02
5.794E 01	3.938E-01	2.326E 02	3.456E-03	2.019E-02
5.822E 01	1.368E 00	2.340E 02	3.367E-03	2.115E-02
5.845E 01	1.073E 00	2.350E 02	3.396E-03	2.119E-02
5.917E 01	3.319E 00	2.384E 02	3.424E-03	2.163E-02
6.019E 01	4.347E 00	2.427E 02	3.503E-03	2.172E-02
6.220E 01	8.229E 00	2.509E 02	3.534E-03	2.199E-02
6.362E 01	6.354E 00	2.573E 02	3.448E-03	2.186E-02
6.608E 01	1.192E 01	2.692E 02	3.439E-03	2.016E-02
6.646E 01	1.737E 00	2.709E 02	3.436E-03	1.946E-02
6.650E 01	1.775E-01	2.711E 02	3.493E-03	1.966E-02
6.670E 01	8.992E-01	2.720E 02	3.484E-03	1.942E-02
6.836E 01	7.565E 00	2.796E 02	3.369E-03	1.502E-02
6.980E 01	5.581E 00	2.852E 02	3.260E-03	1.016E-02
7.052E 01	2.274E 00	2.874E 02	3.197E-03	7.767E-03
7.113E 01	1.666E 00	2.891E 02	3.169E-03	6.853E-03
7.251E 01	3.384E 00	2.925E 02	3.135E-03	5.903E-03
7.404E 01	3.141E 00	2.956E 02	3.067E-03	4.274E-03
7.419E 01	2.491E-01	2.959E 02	3.050E-03	3.934E-03
7.494E 01	1.022E 00	2.969E 02	2.975E-03	2.703E-03
7.494E 01	1.661E-03	2.969E 02	2.975E-03	2.696E-03
7.627E 01	6.263E-01	2.975E 02	3.040E-03	3.927E-03
7.912E 01	1.443E 00	2.990E 02	3.051E-03	4.473E-03
8.302E 01	1.422E 00	3.004E 02	2.966E-03	3.167E-03
8.583E 01	6.573E-01	3.011E 02	2.967E-03	3.410E-03
8.869E 01	3.051E-01	3.014E 02	2.992E-03	4.140E-03
8.870E 01	0.000	3.014E 02	2.992E-03	4.141E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	1017.	(LBF)
MEASURED THRUST	1300.	(LBF)
CALCULATED SPECIFIC IMPULSE	2251.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2876.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.6746	
MEASURED THRUST COEFFICIENT	0.8620	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	4170.	(LBF)
NET THRUST	1142.	(LBF)
SPECIFIC IMPULSE	2527.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.7575	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.6	(LBF)
INLET MOMENTUM CHANGE	-417.3	(LBF)
COMBUSTOR FRICTION DRAG	185.4	(LBF)
COMBUSTOR STRUT DRAG	43.00	(LBF)
COMBUSTOR MOMENTUM CHANGE	680.	(LBF)
NOZZLE FRICTION DRAG	30.41	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	754.	(LBF)
NOZZLE PRESSURE INTEGRAL	785.	(LBF)
EXTERNAL FRICTION DRAG	69.53	(LBF)
EXTERNAL PRESSURE INTEGRAL	-677.	(LBF)
TOTAL EXTERNAL DRAG	-747.	(LBF)
TOTAL STRUT DRAG	43.00	(LBF)
CAVITY FORCE	-806.	(LBF)
CALCULATED LOAD CELL FORCE	-535.	(LBF)
MEASURED LOAD CELL FORCE	-252.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, -155.3, -125.4,

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7210	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.605	(IN)
NOZZLE SHROUD TRAILING EDGE	74.945	(IN)
NOZZLE PLUG TRAILING EDGE	88.697	(IN)
STRUT LEADING EDGE	57.861	(IN)
STRUT TRAILING EDGE	66.461	(IN)
COMBUSTOR EXIT	66.461	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9904	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1049	
DELTA PT2	0.0953	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3335	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1063	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9078	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9175	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9260	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8790	
ENTHALPY AT PO - SUPERSONIC	-59.83	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-33.02	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0251
EQUIVALENCE RATIO	0.798
COMBUSTOR EFFICIENCY	0.848
TOTAL PRESSURE RATIO	0.0783
COMBUSTOR EFFECTIVENESS	0.7788

INJECTOR DISCHARGE COEFFICIENTS 0.9444, 0.4501, 1.0001, 0.8069

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9537
NOZZLE COEFFICIENT - CT	0.8727
PROCESS EFFICIENCY	0.8965
KINETIC ENERGY EFFICIENCY	0.8970

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.706	B
1C	44.300	
2A	50.181	D
2C	46.250	E
3A	55.471	
3B	57.656	
4	46.206	

Reading 90

t = 197.22 sec.

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

X	P	T	H		GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	C	IVAC	PHI	ETAC
WIND TUNNEL		1	0	5														
0.000	996.249	2992	667.2(	792)	1.2930	28.956	2577											
0.000	0.154	287	-60.1(	69)	1.3961	28.955	830	7.270	6035	1.807	0.06073	15.417	0.9912	2930	5.693	190.0		
SPIKE TIP NS		2	0	6														
0.600	11.500	2992	667.2(	792)	1.2928	28.955	2577											
0.600	10.628	2939	651.2(	777)	1.2946	28.955	2556	0.351	896	2.113	0.06073	15.417	0.9912	3128	0.846	202.9		
WIND TUNNEL		3	0	0														
0.000	996.249	2992	667.2(	792)	1.2930	28.956	2577											
0.000	0.172	296	-57.9(	71)	1.3964	28.955	843	7.144	6023	1.807	0.06565	16.668	0.9912	3164	6.146	189.8		
SPIKE TIP NS		4	0	0														
0.600	11.500	2992	667.2(	792)	1.2928	28.955	2577											
0.600	10.463	2928	648.0(	774)	1.2949	28.955	2552	0.384	981	2.113	0.06565	16.668	0.9912	3164	1.001	189.8		
INLET THROAT		5	0	3														
40.400	321.812	2929	648.3(	779)	1.2950	28.956	2552											
40.400	10.582	1261	179.5(	308)	1.3622	28.955	1717	2.820	4843	1.878	0.76157	15.417	0.0790	2535	57.319	164.4		
INLET UPNRBK		6	0	3														
40.400	321.812	2929	648.3(	774)	1.2950	28.956	2552											
40.400	9.126	1212	167.0(	296)	1.3653	28.955	1686	2.911	4907	1.878	0.69234	15.417	0.0869	2555	52.802	165.7		
INLET DNNRBK		7	0	4														
40.400	102.827	2929	648.3(	774)	1.2950	28.955	2552											
40.400	89.523	2838	620.8(	747)	1.2979	28.955	2515	0.466	1171	1.956	0.69234	15.417	0.0869	2555	12.603	168.7		
COMBUSTOR	0	8	1	3														
40.410	321.564	2929	648.2(	774)	1.2950	28.956	2552											
40.410	10.583	1261	179.6(	308)	1.3622	28.955	1717	2.820	4842	1.878	0.76147	15.417	0.0790	2535	57.305	164.4		
COMBUSTOR	0	9	2	3														
40.725	314.500	2924	646.7(	772)	1.2952	28.956	2550											
40.725	10.798	1271	182.3(	311)	1.3615	28.955	1724	2.796	4821	1.879	0.76422	15.417	0.0788	2527	57.292	163.9		
COMBUSTOR	0	10	3	4														
41.215	285.616	2916	644.2(	770)	1.2955	28.956	2547											
41.215	11.200	1314	193.3(	322)	1.3589	28.955	1751	2.713	4750	1.885	0.75862	15.417	0.0795	2504	56.001	162.4		
COMBUSTOR	0	11	4	4														
41.500	260.349	2911	642.8(	769)	1.2956	28.956	2545											
41.500	11.610	1357	204.4(	333)	1.3563	28.955	1778	2.635	4683	1.891	0.75097	15.417	0.0802	2483	54.659	161.0		
COMBUSTOR	0	12	5	5														
42.460	208.377	2894	637.7(	764)	1.2961	28.955	2538											
42.460	12.016	1441	226.7(	356)	1.3513	28.955	1829	2.480	4535	1.904	0.70841	15.417	0.0850	2435	49.930	157.9		
COMBUSTOR	0	13	6	5														
42.710	201.143	2890	636.4(	762)	1.2963	28.955	2536											
42.710	12.022	1452	229.5(	358)	1.3507	28.955	1835	2.458	4512	1.906	0.69980	15.417	0.0860	2427	49.069	157.4		
COMBUSTOR	0	14	7	5														
42.775	199.195	2889	636.0(	762)	1.2963	28.955	2536											
42.775	12.022	1455	230.4(	359)	1.3505	28.955	1837	2.453	4506	1.907	0.69739	15.417	0.0863	2425	48.831	157.3		
COMBUSTOR	0	15	8	4														
44.310	162.690	2864	628.5(	755)	1.2971	28.955	2525											
44.310	11.945	1516	246.4(	375)	1.3471	28.955	1873	2.335	4372	1.918	0.64558	15.417	0.0932	2380	43.866	154.4		
COMBUSTOR	0	16	9	4														
44.800	154.024	2856	626.2(	752)	1.2974	28.955	2522											
44.800	12.098	1538	252.3(	381)	1.3459	28.955	1885	2.294	4325	1.921	0.63760	15.417	0.0944	2365	42.860	153.4		
COMBUSTOR	0	17	10	4														
45.495	145.364	2845	622.9(	749)	1.2977	28.955	2518											
45.495	12.389	1564	259.2(	388)	1.3445	28.955	1900	2.245	4266	1.924	0.63332	15.417	0.0950	2346	41.990	152.2		
COMBUSTOR	0	18	11	4														
46.210	138.207	2835	620.0(	746)	1.2981	28.955	2510											
46.210	12.187	1571	261.2(	390)	1.3441	28.955	1904	2.225	4237	1.926	0.61573	15.417	0.0978	2335	40.543	151.5		

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READING = 0090  BLOCK =  82  TIME = 197.225  MACH  7.3  PT = 996.249  TT = 2992.2                                        PAGE  2

                 P      T     H           GAMMA  MOL WT SONV  MACH  VEL   S      W/A      *     A/AC   MOMTM  CF    IVAC  PHI  ETAC
COMBUSTOR        0   19   12   4
46.260    137.656 2835   619.8( 746) 1.2980 28.955 2513
46.260     12.136 1572   261.3( 390) 1.3441 28.955 1904 2.220 4235 1.926 0.61391 15.417 0.0980   2335 40.409 151.4
COMBUSTOR        0   20   13   4
47.310    126.256 2823   616.3( 743) 1.2984 28.955 2509
47.310     11.304 1570   260.9( 390) 1.3442 28.955 1904 2.216 4218 1.931 0.56907 15.417 0.1058   2327 37.300 151.0
COMBUSTOR        0   21   14   5
48.110    118.338 2816   614.1( 740) 1.2986 28.955 2506
48.110     10.227 1551   255.8( 385) 1.3452 28.955 1893 2.237 4234 1.935 0.52308 15.417 0.1151   2330 34.420 151.2
COMBUSTOR        0   22   15   5
50.185     97.407 2798   608.9( 735) 1.2992 28.955 2498
50.185      7.016 1470   234.2( 363) 1.3497 28.955 1846 2.346 4331 1.946 0.38733 15.417 0.1554   2354 26.067 152.7
COMBUSTOR        0   23   16   5
50.715     92.851 2794   607.8( 734) 1.2993 28.955 2497
50.715      6.472 1455   230.3( 359) 1.3505 28.955 1837
                                                          2.366 4346 1.949 0.36224 15.417 0.1662   2358 24.468 153.0
COMBUSTOR        0   24   17   4
52.125     83.778 2788   605.0( 732) 1.2996 28.955 2493
52.125      5.301 1414   219.3( 348) 1.3529 28.955 1812 2.424 4393 1.955 0.30873 15.417 0.1950   2370 21.078 153.7
COMBUSTOR        0   25   18   5
54.225     74.095 2775   601.6( 728) 1.3000 28.955 2488
54.225      4.128 1361   205.5( 334) 1.3561 28.955 1780 2.501 4452 1.962 0.25304 15.417 0.2379   2385 17.507 154.7
COMBUSTOR        0   26   19   5
54.725     71.871 2771   600.9( 728) 1.3001 28.955 2487
54.725      3.929 1393   203.4( 332) 1.3565 28.955 1775 2.513 4460 1.964 0.20270 15.417 0.2480   2387 16.822 154.8
COMBUSTOR        0   27   20   5
55.475     68.786 2768   599.9( 727) 1.3002 28.955 2486
55.475      3.665 1342   200.5( 329) 1.3572 28.955 1768 2.528 4470 1.967 0.22878 15.417 0.2631   2389 15.895 155.0
COMBUSTOR        0   28   21   5
55.760     67.654 2767   599.6( 726) 1.3002 28.955 2485
55.760      3.575 1338   199.6( 328) 1.3574 28.955 1766 2.533 4474 1.968 0.22393 15.417 0.2688   2390 15.569 155.0
COMBUSTOR        0   29   22   5
56.235     57.536 2765   599.0( 726) 1.3003 28.955 2485
56.235      2.702 1296   188.7( 318) 1.3600 28.955 1740 2.604 4531 1.979 0.17699 15.417 0.3401   2407 12.464 156.1
COMBUSTOR        0   30   23   5
57.660     55.069 2760   597.6( 724) 1.3004 28.955 2482
57.660      2.444 1274   183.0( 312) 1.3614 28.955 1726 2.639 4555 1.981 0.16364 15.417 0.3678   2413 11.583 156.5
COMBUSTOR        0   31   24   5
57.715     54.955 2760   597.5( 724) 1.3004 28.955 2482
57.715      2.434 1270   182.8( 312) 1.3614 28.955 1725 2.640 4555 1.981 0.16313 15.417 0.3690   2413 11.548 156.5
COMBUSTOR        0   32   25   5
57.855     54.702 2759   597.4( 724) 1.3004 28.955 2482
57.855      2.413 1272   182.4( 311) 1.3615 28.955 1724 2.642 4557 1.982 0.16198 15.417 0.3716   2413 11.471 156.5
COMBUSTOR        0   33   26   5
57.935     55.385 2759   597.3( 724) 1.3004 28.955 2482
57.935      2.438 1271   182.2( 311) 1.3616 28.955 1724 2.644 4558 1.981 0.16380 15.417 0.3675   2413 11.602 156.5
COMBUSTOR        0   34   27   5
58.441     55.448 2758   596.9( 724) 1.3005 28.955 2481
58.441      2.415 1267   181.0( 310) 1.3618 28.955 1721 2.650 4562 1.980 0.16298 15.417 0.3693   2414 11.553 156.6
COMBUSTOR        0   35   28   4
59.165     54.939 2756   596.3( 723) 1.3006 28.955 2481
59.165      2.366 1262   179.8( 309) 1.3621 28.955 1718 2.657 4565 1.981 0.16039 15.417 0.3753   2415 11.379 156.6
COMBUSTOR        0   36   29   4
60.185     54.597 2753   595.6( 722) 1.3006 28.955 2480
60.185      2.349 1260   179.4( 308) 1.3622 28.955 1717 2.658 4563 1.981 0.15937 15.417 0.3777   2414 11.302 156.6
COMBUSTOR        0   37   30   3
62.195     54.808 2750   594.7( 721) 1.3007 28.955 2478
62.195      2.472 1275   183.1( 312) 1.3613 28.955 1726
                                                          2.629 4538 1.981 0.16492 15.417 0.3650   2406 11.631 156.0
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ORIGINAL PAGE IS
OF POOR QUALITY

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READING # 0090  BLOCK #  82  TIME = 197.223  MACH  7.5  PI = 996.249  TI = 2992.2                                          PAGE  3

                       P     T      H              GAMMA  MOLWT SONV  MACH  VEL   S       F/A       W      A/AP     MEMIN    C       TVAL  PHI  ETAP
COMBUSTOR              0    38   31    5
63.615           54.936  2749   594.5(  721)  1.3008 28.955  2478
63.615            2.575  1287   186.3(  315)  1.3606 28.955  1730  2.606  4518  1.980  0.16939  15.417  0.4553    2309  11.894  155.6
COMBUSTOR              0    39   32    5
66.079           49.987  2746   593.5(  720)  1.3009 28.955  2477
66.079            2.499  1308   191.7(  321)  1.3593 28.955  1747  2.567  4484  1.986  0.16056  15.417  0.4709    2309  11.189  154.9
COMBUSTOR              0    40   33    4
66.455           46.200  2746   593.4(  720)  1.3009 28.955  2477
66.455            2.331  1311   192.4(  321)  1.3591 28.955  1749  2.561  4479  1.992  0.14927  15.417  0.4032    2367  10.391  154.8
NOZZLE  AE                  41   34    4
88.691           46.200  2746   593.4(  720)  1.3009 28.955  2477
88.691            0.212   678    34.1(  163)  1.3949 28.955  1274  4.152  5290  1.992  0.03107  15.417  1.9371    2640   2.555  171.5
NOZZLE  PO                  42   35    4
88.691           46.200  2746   593.4(  720)  1.3009 28.955  2477
88.691            0.154   619    19.9(  149)  1.3968 28.955  1219  4.396  5357  1.992  0.02502  15.417  2.4056    2662   2.083  172.7
FICTIVE COMBUSTR    60   53    0
66.455          321.812  2746   593.4(  720)  1.3008 28.956  2477
66.455            0.154   356   -43.5(   89)  1.3981 28.955   924  6.106  5645  1.859  0.04585  15.417  1.3127    2757   4.023  178.8
FICTIVE NOZZLE      61   54    0
88.691           56.115  2736   590.6(  717)  1.3012 28.955  2473
88.691            0.193   621    20.4(  149)  1.3967 28.955  1221  4.375  5341  1.977  0.03107  15.417  1.9371    2655   2.579  172.2
```

XABS	P-IR	P-OR	PFA	QOX	Q-IR	Q-OR	CSWALL	P-IR/PSO	P-IR/PTO	P-OR/PSO	P-OR/PTO
6.991E-01	7.000E-01	0.000	-2.776E-01	0.000	0.000	0.000	2.170E-02	4.536E 00	7.026E-04	1.000	0.000
1.836E 01	7.000E-01	0.000	-2.329E 01	0.000	0.000	0.000	1.630E 02	4.536E 00	7.026E-04	0.000	0.000
3.070E 01	1.055E 00	0.000	-9.443E 01	0.000	0.000	0.000	5.053E 02	6.836E 00	1.059E-03	0.000	0.000
3.508E 01	1.984E 00	0.000	-1.930E 02	0.000	0.000	0.000	6.804E 02	1.287E 01	1.993E-03	0.000	0.000
3.555E 01	2.245E 00	0.000	-2.122E 02	0.000	0.000	0.000	7.013E 02	1.455E 01	2.253E-03	0.000	0.000
3.606E 01	2.050E 00	0.000	-2.340E 02	-1.081E 02	-1.081E 02	0.000	7.246E 02	1.328E 01	2.058E-03	0.000	0.000
3.648E 01	2.246E 00	0.000	-2.524E 02	-1.107E 02	-1.107E 02	0.000	7.443E 02	1.456E 01	2.255E-03	0.000	0.000
3.659E 01	2.285E 00	3.181E 00	-2.906E 02	-1.115E 02	-1.115E 02	0.000	7.496E 02	1.481E 01	2.294E-03	2.062E 01	3.193E-03
3.660E 01	2.287E 00	3.199E 00	-2.907E 02	-1.115E 02	-1.115E 02	0.000	7.499E 02	1.482E 01	2.296E-03	2.073E 01	3.211E-03
3.701E 01	2.430E 00	4.364E 00	-2.929E 02	-1.142E 02	-1.142E 02	0.000	7.925E 02	1.575E 01	2.439E-03	2.828E 01	4.381E-03
3.726E 01	2.339E 00	5.087E 00	-2.927E 02	-1.159E 02	-1.159E 02	0.000	8.193E 02	1.515E 01	2.348E-03	3.297E 01	5.107E-03
3.803E 01	2.065E 00	8.693E 00	-2.750E 02	-1.215E 02	-1.215E 02	0.000	9.017E 02	1.338E 01	2.073E-03	5.633E 01	8.726E-03
3.872E 01	6.416E 00	1.197E 01	-2.706E 02	-1.791E 02	-1.286E 02	-5.056E 01	9.791E 02	4.157E 01	6.440E-03	7.756E 01	1.201E-02
3.875E 01	6.572E 00	1.190E 01	-2.707E 02	-1.806E 02	-1.289E 02	-5.173E 01	9.819E 02	4.259E 01	6.597E-03	7.709E 01	1.194E-02
3.901E 01	8.200E 00	1.115E 01	-2.742E 02	-1.965E 02	-1.326E 02	-6.387E 01	1.011E 03	5.313E 01	8.231E-03	7.224E 01	1.119E-02
3.950E 01	1.135E 01	9.737E 00	-2.896E 02	-2.280E 02	-1.414E 02	-8.670E 01	1.067E 03	7.353E 01	1.139E-02	6.309E 01	9.773E-03
3.974E 01	1.096E 01	9.031E 00	-2.977E 02	-2.447E 02	-1.467E 02	-9.807E 01	1.096E 03	7.104E 01	1.100E-02	5.852E 01	9.065E-03
4.000E 01	1.056E 01	9.116E 00	-3.028E 02	-2.628E 02	-1.529E 02	-1.099E 02	1.125E 03	6.844E 01	1.060E-02	5.907E 01	9.150E-03
4.021E 01	1.104E 01	9.187E 00	-3.069E 02	-2.785E 02	-1.587E 02	-1.198E 02	1.150E 03	7.152E 01	1.108E-02	5.953E 01	9.222E-03
4.040E 01	1.145E 01	9.965E 00	-3.098E 02	-2.922E 02	-1.638E 02	-1.284E 02	1.172E 03	7.417E 01	1.149E-02	6.457E 01	1.000E-02
4.041E 01	1.147E 01	1.001E 01	-3.098E 02	-2.929E 02	-1.641E 02	-1.289E 02	1.173E 03	7.431E 01	1.151E-02	6.485E 01	1.004E-02
4.072E 01	1.216E 01	1.133E 01	-3.128E 02	-3.166E 02	-1.732E 02	-1.434E 02	1.210E 03	7.882E 01	1.221E-02	7.342E 01	1.137E-02
4.121E 01	1.325E 01	1.925E 00	-3.286E 02	-3.542E 02	-1.885E 02	-1.656E 02	1.267E 03	8.583E 01	1.330E-02	1.247E 01	1.932E-03
4.150E 01	1.387E 01	1.987E 00	-3.455E 02	-3.765E 02	-1.981E 02	-1.783E 02	1.301E 03	8.991E 01	1.393E-02	1.288E 01	1.995E-03
4.246E 01	6.575E 00	2.197E 00	-3.791E 02	-4.547E 02	-2.328E 02	-2.219E 02	1.415E 03	4.261E 01	6.600E-03	1.424E 01	2.205E-03
4.271E 01	7.147E 00	2.251E 00	-3.833E 02	-4.753E 02	-2.421E 02	-2.332E 02	1.445E 03	4.631E 01	7.173E-03	1.459E 01	2.260E-03
4.277E 01	7.295E 00	2.266E 00	-3.745E 02	-4.805E 02	-2.445E 02	-2.360E 02	1.453E 03	4.727E 01	7.323E-03	1.468E 01	2.274E-03
4.431E 01	1.080E 01	5.523E 00	-4.074E 02	-5.974E 02	-2.975E 02	-2.999E 02	1.638E 03	7.001E 01	1.085E-02	3.579E 01	5.544E-03
4.480E 01	1.192E 01	6.563E 00	-4.161E 02	-6.329E 02	-3.131E 02	-3.198E 02	1.697E 03	7.727E 01	1.197E-02	4.253E 01	6.587E-03
4.549E 01	1.103E 01	8.037E 00	-4.260E 02	-6.824E 02	-3.344E 02	-3.481E 02	1.782E 03	7.144E 01	1.107E-02	5.208E 01	8.068E-03
4.621E 01	1.010E 01	7.298E 00	-4.272E 02	-7.284E 02	-3.553E 02	-3.730E 02	1.870E 03	6.544E 01	1.014E-02	4.729E 01	7.325E-03
4.626E 01	1.003E 01	7.246E 00	-4.271E 02	-7.312E 02	-3.568E 02	-3.745E 02	1.876E 03	6.502E 01	1.007E-02	4.695E 01	7.273E-03
4.731E 01	8.675E 00	6.160E 00	-4.215E 02	-7.841E 02	-3.859E 02	-3.982E 02	2.005E 03	5.621E 01	8.708E-03	3.992E 01	6.183E-03
4.811E 01	4.450E 00	5.332E 00	-4.091E 02	-8.186E 02	-4.069E 02	-4.117E 02	2.105E 03	2.884E 01	4.467E-03	3.455E 01	5.352E-03
5.018E 01	3.186E 00	3.186E 00	-3.650E 02	-8.985E 02	-4.565E 02	-4.420E 02	2.363E 03	2.064E 01	3.198E-03	2.064E 01	3.198E-03
5.071E 01	2.637E 00	2.637E 00	-3.569E 02	-9.161E 02	-4.680E 02	-4.480E 02	2.430E 03	1.709E 01	2.647E-03	1.709E 01	2.647E-03
5.212E 01	3.275E 00	3.275E 00	-3.351E 02	-9.587E 02	-4.965E 02	-4.622E 02	2.607E 03	2.122E 01	3.287E-03	2.122E 01	3.287E-03
5.422E 01	1.750E 00	1.750E 00	-3.074E 02	-1.012E 03	-5.330E 02	-4.787E 02	2.874E 03	1.134E 01	1.757E-03	1.134E 01	1.757E-03
5.472E 01	1.750E 00	1.750E 00	-3.029E 02	-1.022E 03	-5.407E 02	-4.816E 02	2.937E 03	1.134E 01	1.757E-03	1.134E 01	1.757E-03
5.547E 01	1.489E 00	1.489E 00	-2.966E 02	-1.037E 03	-5.515E 02	-4.857E 02	3.033E 03	9.650E 00	1.495E-03	9.650E 00	1.495E-03
5.576E 01	1.390E 00	1.390E 00	-2.945E 02	-1.042E 03	-5.553E 02	-4.871E 02	3.070E 03	9.008E 00	1.395E-03	9.008E 00	1.395E-03
5.623E 01	9.312E-01	1.225E 00	-2.765E 02	-1.051E 03	-5.615E 02	-4.895E 02	3.102E 03	6.034E 00	9.348E-04	7.938E 00	1.230E-03
5.766E 01	1.310E 00	1.310E 00	-2.675E 02	-1.074E 03	-5.776E 02	-4.962E 02	3.209E 03	8.489E 00	1.315E-03	8.489E 00	1.315E-03
5.771E 01	1.350E 00	1.313E 00	-2.671E 02	-1.075E 03	-5.782E 02	-4.964E 02	3.217E 03	8.748E 00	1.355E-03	8.511E 00	1.318E-03
5.785E 01	1.350E 00	1.322E 00	-2.663E 02	-1.077E 03	-5.796E 02	-4.971E 02	3.234E 03	8.748E 00	1.355E-03	8.565E 00	1.327E-03
5.793E 01	1.327E 00	1.327E 00	-2.658E 02	-1.078E 03	-5.804E 02	-4.974E 02	3.245E 03	8.596E 00	1.332E-03	8.596E 00	1.332E-03
5.844E 01	1.357E 00	1.357E 00	-2.627E 02	-1.085E 03	-5.850E 02	-4.996E 02	3.309E 03	8.792E 00	1.362E-03	8.792E 00	1.362E-03
5.916E 01	1.400E 00	1.400E 00	-2.590E 02	-1.094E 03	-5.910E 02	-5.028E 02	3.402E 03	9.072E 00	1.405E-03	9.072E 00	1.405E-03
6.018E 01	1.525E 00	1.525E 00	-2.556E 02	-1.105E 03	-5.980E 02	-5.067E 02	3.532E 03	9.882E 00	1.531E-03	9.682E 00	1.531E-03
6.219E 01	2.487E 00	2.487E 00	-2.551E 02	-1.118E 03	-6.073E 02	-5.108E 02	3.790E 03	1.612E 01	2.497E-03	1.612E 01	2.497E-03
6.361E 01	1.419E 00	1.419E 00	-2.551E 02	-1.124E 03	-6.118E 02	-5.126E 02	3.972E 03	9.193E 00	1.424E-03	9.193E 00	1.424E-03
6.608E 01	1.376E 00	1.376E 00	-2.551E 02	-1.136E 03	-6.182E 02	-5.180E 02	4.289E 03	8.915E 00	1.381E-03	8.915E 00	1.381E-03
6.645E 01	1.500E 00	1.369E 00	-2.551E 02	-1.138E 03	-6.190E 02	-5.191E 02	4.337E 03	9.720E 00	1.506E-03	8.872E 00	1.374E-03
6.649E 01	1.500E 00	1.368E 00	-2.551E 02	-1.138E 03	-6.191E 02	-5.192E 02	4.342E 03	9.720E 00	1.506E-03	8.868E 00	1.374E-03
6.669E 01	1.452E 00	1.365E 00	-2.551E 02	-1.139E 03	-6.195E 02	-5.199E 02	4.368E 03	9.406E 00	1.457E-03	8.845E 00	1.370E-03
6.835E 01	1.050E 00	1.190E 00	-2.410E 02	-1.149E 03	-6.234E 02	-5.256E 02	4.584E 03	6.804E 00	1.054E-03	7.711E 00	1.194E-03

YARS	P-IP	P-OR	PRA	CIE	C-IP	C-??	C??ALE	P-RL/P-S	P-IN/PTO	P-CH/P-SO	P-CH/PTO
6.979E 01	1.045E 00	1.137E 00	-1.8[illegible] 02	-1.15[illegible] 03	-6.270E 02	-5.5[illegible] 02	[illegible]	6.771E 00	1.[illegible]9E-03	7.355E 00	1.141E-03
7.051E 01	7.933E-01	1.110E 00	-1.617E 02	-1.165E 03	-6.26[illegible] 02	-5.537E 02	[illegible]	5.1[illegible] 00	7.962E-04	7.193E 00	1.110E-03
7.112E 01	5.800E-01	1.060E 00	-1.429E 02	-1.166E 03	-6.303E 02	-5.558E 02	4.923E 03	3.758E 00	5.822E-04	6.867E 00	1.064E-03
7.250E 01	5.200E-01	9.460E-01	-1.083E 02	-1.171E 03	-6.333E 02	-5.576E 02	5.069E 03	3.570E 00	5.220E-04	6.130E 00	9.496E-04
7.403E 01	8.661E-01	8.200E-01	-7.106E 01	-1.173E 03	-6.361E 02	-5.570E 02	5.273E 03	5.612E 00	8.693E-04	5.313E 00	8.231E-04
7.418E 01	9.000E-01	7.525E-01	-6.735E 01	-1.173E 03	-6.360E 02	-5.568E 02	5.291E 03	5.832E 00	9.030E-04	4.876E 00	7.553E-04
7.493E 01	7.990E-01	4.150E-01	-4.416E 01	-1.174E 03	-6.374E 02	-5.361E 02	5.379E 03	5.178E 00	8.020E-04	2.689E 00	4.166E-04
7.494E 01	7.985E-01	4.132E-01	-4.354E 01	-1.174E 03	-6.370E 02	-5.361E 02	5.375E 03	5.174E 00	8.015E-04	2.677E 00	4.147E-04
7.626E 01	6.200E-01	0.000	-2.836E 01	-1.173E 03	-6.390E 02	-5.344E 02	5.427E 03	4.018E 00	6.223E-04	0.000	0.000
7.911E 01	3.550E-01	0.000	-9.862E 00	-1.176E 03	-6.414E 02	-5.344E 02	5.525E 03	2.300E 00	3.563E-04	0.000	0.000
8.301E 01	5.250E-01	0.000	9.945E 00	-1.178E 03	-6.431E 02	-5.344E 02	5.630E 03	3.402E 00	5.270E-04	0.000	0.000
8.582E 01	4.750E-01	0.000	2.105E 01	-1.179E 03	-6.443E 02	-5.344E 02	5.685E 03	3.078E 00	4.768E-04	0.000	0.000
8.868E 01	3.300E-01	0.000	3.077E 01	-1.181E 03	-6.465E 02	-5.344E 02	5.707E 03	2.138E 00	3.312E-04	0.000	0.000
8.869E 01	3.297E-01	0.000	3.077E 01	-1.181E 03	-6.465E 02	-5.344E 02	5.707E 03	2.136E 00	3.309E-04	0.000	0.000

ORIGINAL PAGE IS
OF POOR QUALITY

READING = 0090 BLOCK = 82 TIME = 197.223 MACH 7.5 PT = 996.209 TT = 2992.2

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.560E 01	8.560E 01	2.232E-03	3.489E-02
4.041E 01	1.501E-01	8.575E 01	2.233E-03	3.490E-02
4.072E 01	4.730E 00	9.048E 01	2.247E-03	3.530E-02
4.121E 01	7.409E 00	9.789E 01	2.296E-03	3.599E-02
4.150E 01	4.319E 00	1.072E 02	2.343E-03	3.654E-02
4.246E 01	1.428E 01	1.165E 02	2.441E-03	3.626E-02
4.271E 01	3.612E 00	1.201E 02	2.456E-03	3.608E-02
4.277E 01	9.375E-01	1.210E 02	2.460E-03	3.603E-02
4.431E 01	2.141E 01	1.424E 02	2.535E-03	3.460E-02
4.480E 01	6.977E 00	1.490E 02	2.561E-03	3.461E-02
4.549E 01	9.274E 00	1.583E 02	2.593E-03	3.490E-02
4.621E 01	9.392E 00	1.677E 02	2.609E-03	3.416E-02
4.626E 01	6.530E-01	1.683E 02	2.610E-03	3.407E-02
4.731E 01	1.316E 01	1.815E 02	2.619E-03	3.168E-02
4.811E 01	9.288E 00	1.908E 02	2.607E-03	2.092E-02
5.018E 01	2.015E 01	2.109E 02	2.540E-03	2.067E-02
5.071E 01	4.257E 00	2.152E 02	2.528E-03	1.921E-02
5.212E 01	1.015E 01	2.253E 02	2.493E-03	1.606E-02
5.422E 01	1.269E 01	2.380E 02	2.448E-03	1.284E-02
5.472E 01	2.674E 00	2.407E 02	2.442E-03	1.227E-02
5.547E 01	3.820E 00	2.445E 02	2.433E-03	1.151E-02
5.576E 01	1.396E 00	2.459E 02	2.430E-03	1.125E-02
5.623E 01	1.080E 00	2.470E 02	2.380E-03	8.665E-03
5.766E 01	3.069E 00	2.501E 02	2.361E-03	7.923E-03
5.771E 01	1.924E-01	2.503E 02	2.360E-03	7.895E-03
5.785E 01	4.827E-01	2.508E 02	2.359E-03	7.835E-03
5.793E 01	2.782E-01	2.510E 02	2.353E-03	7.899E-03
5.844E 01	1.753E 00	2.528E 02	2.342E-03	7.819E-03
5.916E 01	2.484E 00	2.553E 02	2.335E-03	7.666E-03
6.018E 01	3.457E 00	2.587E 02	2.330E-03	7.596E-03
6.219E 01	6.897E 00	2.656E 02	2.335E-03	7.890E-03
6.361E 01	5.008E 00	2.706E 02	2.339E-03	8.125E-03
6.608E 01	8.613E 00	2.792E 02	2.382E-03	7.867E-03
6.645E 01	1.248E 00	2.805E 02	2.413E-03	7.416E-03
6.649E 01	1.117E-01	2.806E 02	2.312E-03	5.135E-03
6.669E 01	4.730E-01	2.811E 02	2.307E-03	5.062E-03
6.835E 01	3.676E 00	2.848E 02	2.257E-03	4.240E-03
6.979E 01	2.763E 00	2.875E 02	2.244E-03	4.142E-03
7.051E 01	1.298E 00	2.888E 02	2.216E-03	3.729E-03
7.112E 01	9.939E-01	2.898E 02	2.187E-03	3.326E-03
7.250E 01	2.044E 00	2.919E 02	2.163E-03	3.046E-03
7.403E 01	2.280E 00	2.941E 02	2.182E-03	3.379E-03
7.418E 01	2.216E-01	2.944E 02	2.177E-03	3.327E-03
7.493E 01	9.759E-01	2.953E 02	2.121E-03	2.626E-03
7.494E 01	1.676E-03	2.953E 02	2.120E-03	2.622E-03
7.626E 01	5.401E-01	2.959E 02	2.119E-03	2.662E-03
7.911E 01	8.593E-01	2.967E 02	2.013E-03	1.730E-03
8.301E 01	8.563E-01	2.976E 02	2.065E-03	2.316E-03
8.582E 01	4.865E-01	2.981E 02	2.039E-03	2.135E-03
8.868E 01	1.723E-01	2.982E 02	1.969E-03	1.608E-03
8.869E 01	0.000	2.982E 02	1.968E-03	1.607E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-275.	(LBF)
MEASURED THRUST	-365.	(LBF)
CALCULATED SPECIFIC IMPULSE	-275.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-365.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.1886	
MEASURED THRUST COEFFICIENT	-.2506	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	0.	(LBF)
NET THRUST	0.	(LBF)
SPECIFIC IMPULSE	0.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.0000	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.6	(LBF)
INLET MOMENTUM CHANGE	-395.4	(LBF)
COMBUSTOR FRICTION DRAG	194.9	(LBF)
COMBUSTOR STRUT DRAG	7.56	(LBF)
COMBUSTOR MOMENTUM CHANGE	-188.	(LBF)
NOZZLE FRICTION DRAG	17.75	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	268.	(LBF)
NOZZLE PRESSURE INTEGRAL	286.	(LBF)
EXTERNAL FRICTION DRAG	29.61	(LBF)
EXTERNAL PRESSURE INTEGRAL	-640.	(LBF)
TOTAL EXTERNAL DRAG	-670.	(LBF)
TOTAL STRUT DRAG	7.56	(LBF)
CAVITY FORCE	-550.	(LBF)
CALCULATED LOAD CELL FORCE	-1495.	(LBF)
MEASURED LOAD CELL FORCE	-1565.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE		

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7150	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.599	(IN)
NOZZLE SHROUD TRAILING EDGE	74.939	(IN)
NOZZLE PLUG TRAILING EDGE	88.691	(IN)
STRUT LEADING EDGE	57.855	(IN)
STRUT TRAILING EDGE	66.455	(IN)
COMBUSTOR EXIT	64.459	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9912	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1019	
DELTA PT2	0.0905	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3230	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1032	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9008	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9127	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9413	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8922	
ENTHALPY AT PO - SUPERSONIC	-36.32	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-0.62	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0000
EQUIVALENCE RATIO	0.000
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.1436
COMBUSTOR EFFECTIVENESS	0.5727
INJECTOR DISCHARGE COEFFICIENTS	

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	1.0054
NOZZLE COEFFICIENT - CT	0.9687
PROCESS EFFICIENCY	1.0565
KINETIC ENERGY EFFICIENCY	1.0113

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.700	
1C	44.300	
2A	50.175	
2C	46.250	
3A	55.465	
3B	57.650	
0	46.200	

Reading 90

t = 206.22 sec.

READING = 0090 BLOCK = 52 TIME = 204.223 MACH 7.5 PT = 995.999 TT = 2894.6

1-27-75
Reg. corrected

S U M M A R Y   R E P O R T

P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	A/A	F	A/AC	MOMTM	Q	IVAC	PHI	ETAC
WIND TUNNEL	1	0 5														
0.000	995.999 2895	637.8(764)	1.2961	28.956	2538											
0.000	0.155 276	-62.8(68)	1.3957	28.955	813	7.281	5921	1.797	0.06226	15.801	0.9909	2947	5.729	186.5		
SPIKE TIP NS	2	0 7														
0.600	11.512 2895	637.8(764)	1.2960	28.955	2538											
0.600	10.626 2842	622.0(748)	1.2977	28.955	2517	0.353	889	2.103	0.06226	15.801	0.9909	3133	0.860	198.3		
WIND TUNNEL	3	0 0														
0.000	995.999 2895	637.8(764)	1.2961	28.956	2538											
0.000	0.172 284	-60.8(68)	1.3960	28.955	825	7.164	5913	1.797	0.06699	17.002	0.9909	3168	6.155	186.3		
SPIKE TIP NS	4	0 0														
0.600	11.512 2895	637.8(764)	1.2960	28.955	2538											
0.600	10.469 2832	619.1(745)	1.2980	28.955	2512	0.365	967	2.103	0.06699	17.002	0.9909	3168	1.007	186.3		
INLET THROAT	5	0 4														
40.400	334.489 2804	610.6(737)	1.2990	28.956	2501											
40.400	10.317 1178	158.2(287)	1.3674	28.955	1663	2.861	4758	1.862	0.78103	15.801	0.0790	2546	57.753	161.1		
INLET UPNNSK	6	0 3														
40.400	334.489 2804	610.6(737)	1.2990	28.956	2501											
40.400	8.898 1132	146.4(275)	1.3704	28.955	1632	2.953	4819	1.862	0.71003	15.801	0.0869	2565	53.178	162.3		
INLET DNNNSK	7	0 4														
40.400	103.336 2804	610.6(737)	1.2990	28.955	2501											
40.400	90.028 2716	584.5(711)	1.3018	28.955	2464	0.464	1143	1.943	0.71003	15.801	0.0869	2565	12.613	162.3		
COMBUSTOR	0 8	1 11														
40.410	220.883 2742	620.0(789)	1.3037	26.264	2601											
40.410	14.027 1383	203.0(375)	1.3573	26.264	1885	2.423	4568	2.041	0.78720	15.929	0.0790	2545	55.883	159.8	0.24	0.07
COMBUSTOR	0 9	2 4														
40.727	166.299 2972	617.3(859)	1.2931	26.515	2684											
40.727	18.489 1756	235.3(481)	1.3360	26.515	2097	2.085	4372	2.082	0.79006	15.929	0.0787	2537	53.685	159.3	0.24	0.25
COMBUSTOR	0 10	3 21														
41.217	207.854 2676	613.1(769)	1.3065	26.218	2575											
41.217	12.396 1322	199.8(357)	1.3612	26.217	1848	2.461	4548	2.039	0.78420	15.929	0.0793	2503	55.421	157.2	0.24	0.04
COMBUSTOR	0 11	4 21														
41.500	195.183 2626	610.6(754)	1.3067	26.174	2555											
41.500	13.795 1353	222.1(367)	1.3598	26.174	1869	2.359	4409	2.038	0.77634	15.929	0.0801	2466	53.198	154.8	0.24	0.01
COMBUSTOR	0 12	5 4														
42.460	101.283 2829	600.5(815)	1.2989	26.418	2630											
42.460	23.663 1999	338.5(556)	1.3274	26.418	2235	1.620	3620	2.106	0.73239	15.929	0.0849	2307	41.203	144.8	0.24	0.18
COMBUSTOR	0 13	6 16														
42.702	94.876 2506	608.5(774)	1.3153	24.097	2608											
42.702	24.005 1784	367.4(534)	1.3412	24.097	2222	1.563	3474	2.215	0.72894	16.046	0.0859	2261	39.349	140.9	0.47	0.02
COMBUSTOR	0 14	7 2														
42.712	94.702 2505	608.4(773)	1.3155	24.095	2606											
42.712	24.019 1783	367.9(534)	1.3413	24.094	2221	1.562	3469	2.215	0.72879	16.046	0.0860	2259	39.289	140.8	0.47	0.01
COMBUSTOR	0 15	8 2														
42.777	93.401 2485	607.5(767)	1.3163	24.080	2599											
42.777	24.111 1777	371.3(532)	1.3417	24.080	2219	1.550	3438	2.214	0.72699	16.046	0.0862	2247	38.646	140.0	0.47	0.01
COMBUSTOR	0 16	9 21														
44.310	67.602 2403	585.4(740)	1.3192	24.065	2559											
44.310	37.923 2086	478.5(634)	1.3302	24.065	2394	0.966	2314	2.229	0.67234	16.046	0.0932	2059	24.175	128.5	0.47	0.00
COMBUSTOR	0 17	10 21														
44.800	65.089 2378	577.7(732)	1.3201	24.062	2547											
44.800	42.338 2140	497.5(652)	1.3283	24.062	2424	0.826	2003	2.229	0.66358	16.046	0.0944	2023	20.660	126.1	0.47	0.00
COMBUSTOR	0 18	11 21														
45.497	58.664 3094	566.6(966)	1.2864	24.785	2826											
45.497	43.073 2899	497.1(898)	1.2931	24.786	2742	0.661	1667	2.305	0.65897	16.046	0.0951	2000	19.124	124.7	0.47	0.32

READING # 0090 BLOCK # 92 TIME # 206.223 MACH 7.5 PT # 995.999 TT # 2894.5

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	K	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.212	62.425	2428	556.1(747)	1.3170	24.167	2565											
46.212	37.739	2148	461.5(653)	1.3267	24.167	2421	0.898	2175	2.237	0.64122	16.046	0.0977	2029	21.678	126.5	0.47	0.05
COMBUSTOR	0	20	13 21														
46.260	63.770	2329	555.4(715)	1.3216	24.077	2521											
46.260	37.325	2041	459.0(619)	1.3317	24.077	2369	0.927	2197	2.223	0.63927	16.046	0.0980	2033	21.827	126.7	0.47	0.01
COMBUSTOR	0	21	14 4														
47.310	62.787	2461	541.0(757)	1.3150	24.239	2577											
47.310	28.288	2026	394.7(611)	1.3303	24.239	2351	1.151	2705	2.239	0.59244	16.046	0.1057	2115	24.908	131.8	0.47	0.08
COMBUSTOR	0	22	15 4														
48.110	62.175	2569	530.5(792)	1.3097	24.370	2620											
48.110	22.694	2013	343.0(605)	1.3292	24.370	2336	1.311	3063	2.251	0.54461	16.046	0.1150	2196	25.926	136.9	0.47	0.14
COMBUSTOR	0	23	16 5														
50.187	54.787	2919	507.8(905)	1.2927	24.775	2752											
50.187	14.926	2152	245.1(645)	1.3192	24.776	2387	1.519	3625	2.290	0.40312	16.046	0.1554	2402	22.712	149.7	0.47	0.32
COMBUSTOR	0	24	17 4														
50.717	57.891	2809	503.4(869)	1.2977	24.678	2710											
50.717	11.612	1914	200.9(569)	1.3294	24.678	2264	1.718	3891	2.276	0.37702	16.046	0.1662	2435	22.796	151.7	0.47	0.28
COMBUSTOR	0	25	18 4														
52.127	56.243	2822	493.7(873)	1.2967	24.718	2713											
52.127	6.800	1609	152.9(534)	1.3332	24.719	2203	1.875	4130	2.278	0.32132	16.046	0.1950	2499	20.622	155.7	0.47	0.29
COMBUSTOR	0	26	19 3														
54.227	53.785	2814	480.4(873)	1.2967	24.644	2713											
54.227	6.400	1684	101.1(496)	1.3365	24.644	2132	2.043	4357	2.288	0.26408	16.089	0.2379	2569	17.880	159.6	0.48	0.30
COMBUSTOR	0	27	20 5														
54.727	76.174	2531	478.0(780)	1.3096	24.376	2600											
54.727	4.250	1222	51.8(355)	1.3658	24.376	1849	2.503	4618	2.233	0.25329	16.089	0.2480	2579	18.178	160.3	0.48	0.19
COMBUSTOR	0	28	21 4														
55.477	69.736	2577	474.6(795)	1.3074	24.430	2619											
55.477	4.151	1270	47.5(369)	1.3626	24.430	1877	2.463	4623	2.244	0.23876	16.089	0.2631	2591	17.153	161.1	0.48	0.21
COMBUSTOR	0	29	22 3														
55.760	67.633	2594	473.5(800)	1.3066	24.449	2625											
55.760	4.113	1288	46.0(374)	1.3614	24.449	1888	2.450	4625	2.248	0.23374	16.089	0.2688	2596	16.800	161.3	0.48	0.22
COMBUSTOR	0	30	23 4														
56.237	55.699	2679	471.6(828)	1.3026	24.536	2659											
56.237	3.266	1325	26.7(385)	1.3565	24.536	1910	2.471	4719	2.272	0.18471	16.089	0.3401	2644	13.545	164.3	0.48	0.25
COMBUSTOR	0	31	24 3														
57.662	57.597	2658	467.1(821)	1.3034	24.528	2650											
57.662	2.798	1249	6.2(362)	1.3629	24.528	1857	2.586	4802	2.267	0.17078	16.089	0.3678	2665	12.746	165.6	0.48	0.25
COMBUSTOR	0	32	25 4														
57.717	46.847	2797	467.0(867)	1.2970	24.664	2704											
57.717	3.325	1466	25.1(427)	1.3494	24.665	1997	2.355	4702	2.296	0.17024	16.089	0.3690	2666	12.441	165.7	0.48	0.31
COMBUSTOR	0	33	26 3														
57.857	47.169	2789	466.7(864)	1.2973	24.658	2701											
57.857	3.263	1451	22.9(423)	1.3502	24.658	1988	2.370	4712	2.294	0.16905	16.089	0.3716	2667	12.379	165.8	0.48	0.31
COMBUSTOR	0	34	27 11														
57.937	64.852	2598	466.5(801)	1.3061	24.472	2626											
57.937	2.556	1149	-4.3(332)	1.3691	24.472	1788	2.715	4854	2.251	0.17097	16.089	0.3674	2668	12.896	165.6	0.48	0.23
COMBUSTOR	0	35	28 5														
58.443	83.254	2488	465.3(766)	1.3112	24.370	2580											
58.443	2.111	967	-22.7(279)	1.3799	24.370	1650	2.995	4942	2.220	0.17012	16.089	0.3693	2671	13.065	166.0	0.48	0.18
COMBUSTOR	0	36	29 5														
59.167	138.290	2325	463.9(713)	1.3186	24.221	2509											
59.167	1.475	699	-48.3(201)	1.3931	24.221	1414	3.560	5063	2.160	0.16739	16.089	0.3753	2673	13.170	166.2	0.48	0.12
COMBUSTOR	0	37	30 4														
60.187	125.680	2350	462.2(721)	1.3174	24.249	2520											
60.187	1.550	738	-47.0(212)	1.3915	24.249	1451	3.478	5048	2.171	0.16632	16.089	0.3777	2674	13.047	166.2	0.48	0.13

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READING = 0090  BLOCK =  92  TIME = 206.223  MACH  7.3  PC = 995.999  TT = 2590.6                                         PAGE  3

                  P     T       H            GAMMA  MOL WT SONV  MACH  VEL    S      A/A      W     AVAC    PORIN    Q    IVAC  PHI  ETAC
COMBUSTOR           0   38   31    7
62.197      26.002 3464   459.5(1089) 1.2623 25.383 2927
62.197       6.275 2495   112.6( 752) 1.2965 25.392 2519 1.654 4165 2.381 0.17211 16.089 0.3650    2670 11.141 165.9 0.48 0.61
COMBUSTOR           0   39   32    6
65.617      38.960 2997   457.7( 933) 1.2870 24.693 2776
65.617       4.294 1779    44.6( 523) 1.3315 24.894 2175 2.090 4546 2.325 0.17678 16.089 0.3553    2664 12.490 165.6 0.48 0.41
COMBUSTOR           0   40   33    5
66.081      28.978 3298   454.0(1033) 1.2714 25.219 2875
66.081       5.455 2264    91.2( 677) 1.3067 25.224 2417 1.763 4261 2.368 0.16756 16.089 0.3749    2655 11.095 169.0 0.48 0.54
COMBUSTOR           0   41   34    4
66.457      24.614 3470   453.3(1091) 1.2614 25.408 2927
66.457       5.871 2537   118.6( 766) 1.2966 25.417 2537 1.613 4093 2.390 0.15578 16.089 0.4032    2653  9.909 164.9 0.48 0.62
COMBUSTOR  REGEN   42   35    3
66.457      24.614 3884   617.1(1239) 1.2402 25.384 3072
66.457       6.793 2978   272.6( 917) 1.2803 25.415 2731 1.520 4152 2.435 0.15578 16.089 0.4032    2778 10.052 172.7 0.48 0.62
NOZZLE  AE         43   36    5
88.693      24.614 3470   453.3(1075) 1.2614 25.408 2927
88.693       0.446 1354  -263.6( 385) 1.3486 25.417 1890 3.169 5990 2.390 0.03243 16.089 1.9371    3216  3.019 199.4 0.48 0.62
NOZZLE  PO         44   37    5
88.693      24.614 3470   453.3(1075) 1.2614 25.408 2927
88.693       0.155 1024  -361.3( 287) 1.3684 25.417 1656 3.856 6385 2.390 0.01588 16.089 3.9559    3350  1.576 208.2 0.48 0.62
NOZZLE  AE REGEN   45   38    5
88.693      24.614 3884   617.1(1239) 1.2402 25.384 3072
88.693       0.503 1614  -183.8( 465) 1.3340 25.417 2052 3.065 6330 2.435 0.03243 16.089 1.9371    3415  3.190 212.3 0.48 0.62
NOZZLE  PO REGEN   46   39    5
88.693      24.614 3884   617.1(1239) 1.2402 25.384 3072
88.693       0.155 1192  -312.1( 337) 1.3584 25.417 1780 3.831 6819 2.435 0.01457 16.089 4.3117    3581  1.544 222.6 0.48 0.62
FICTIVE COMBUSTR   64   57    0
66.457     334.489 4289   453.3(1369) 1.2256 26.360 3149
66.457       0.155  704  -761.0( 191) 1.3776 26.408 1351 5.769 7795 2.221 0.02930 16.089 2.1442    3983  3.549 247.6 0.48 1.00
FICTIVE NOZZLE     65   58    0
88.693      22.284 3432   438.8(1077) 1.2629 25.409 2912
88.693       0.463 1383  -254.6( 394) 1.3468 25.417 1909 3.065 5890 2.394 0.03243 16.089 1.9371    3175  2.969 197.4 0.48 0.62
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READING = 0090 BLOCK = 92 TIME = 206.223 MACH 7.3 PT = 995.999 TT = 2594.6

XABS	P-IH	P-OB	PDA	QUX	Q-IB	Q-OB	CAWALL	P-IB/PSU	P-IB/PTO	P-OB/PSU	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.778E-01	0.000	0.000	0.000	2.470E-02	4.456E 00	6.928E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.534E 02	4.456E 00	6.928E-04	0.000	0.000
3.070E 01	1.055E 00	0.000	-9.370E 01	0.000	0.000	0.000	5.053E 02	6.814E 00	1.059E-03	0.000	0.000
3.508E 01	2.022E 00	0.000	-1.934E 02	0.000	0.000	0.000	6.804E 02	1.306E 01	2.031E-03	0.000	0.000
3.555E 01	2.235E 00	0.000	-2.128E 02	0.000	0.000	0.000	7.013E 02	1.443E 01	2.244E-03	0.000	0.000
3.606E 01	2.090E 00	0.000	-2.348E 02	-1.593E 02	-1.593E 02	0.000	7.246E 02	1.350E 01	2.098E-03	0.000	0.000
3.648E 01	2.257E 00	0.000	-2.534E 02	-1.632E 02	-1.632E 02	0.000	7.443E 02	1.458E 01	2.266E-03	0.000	0.000
3.659E 01	2.287E 00	3.157E 00	-2.914E 02	-1.642E 02	-1.642E 02	0.000	7.497E 02	1.477E 01	2.296E-03	2.039E 01	3.169E-03
3.660E 01	2.288E 00	3.174E 00	-2.915E 02	-1.643E 02	-1.643E 02	0.000	7.500E 02	1.478E 01	2.298E-03	2.050E 01	3.187E-03
3.701E 01	2.395E 00	4.349E 00	-2.937E 02	-1.682E 02	-1.682E 02	0.000	7.924E 02	1.547E 01	2.405E-03	2.809E 01	4.367E-03
3.727E 01	2.328E 00	5.087E 00	-2.934E 02	-1.706E 02	-1.708E 02	0.000	8.194E 02	1.504E 01	2.338E-03	3.286E 01	5.108E-03
3.803E 01	2.130E 00	8.687E 00	-2.762E 02	-1.769E 02	-1.789E 02	0.000	9.015E 02	1.376E 01	2.139E-03	5.610E 01	8.722E-03
3.873E 01	6.497E 00	1.197E 01	-2.724E 02	-2.486E 02	-1.931E 02	-5.545E 01	9.792E 02	4.196E 01	6.523E-03	7.734E 01	1.202E-02
3.875E 01	6.641E 00	1.191E 01	-2.725E 02	-2.505E 02	-1.938E 02	-5.663E 01	9.818E 02	4.289E 01	6.668E-03	7.693E 01	1.196E-02
3.901E 01	8.270E 00	1.120E 01	-2.762E 02	-2.727E 02	-2.028E 02	-6.995E 01	1.011E 03	5.341E 01	8.303E-03	7.232E 01	1.124E-02
3.950E 01	1.156E 01	9.853E 00	-2.919E 02	-3.207E 02	-2.257E 02	-9.496E 01	1.067E 03	7.464E 01	1.160E-02	6.363E 01	9.893E-03
3.975E 01	1.133E 01	9.175E 00	-3.003E 02	-3.481E 02	-2.406E 02	-1.075E 02	1.096E 03	7.318E 01	1.138E-02	5.926E 01	9.212E-03
4.000E 01	1.110E 01	9.310E 00	-3.061E 02	-3.787E 02	-2.583E 02	-1.204E 02	1.125E 03	7.169E 01	1.114E-02	6.012E 01	9.347E-03
4.022E 01	1.320E 01	9.425E 00	-3.116E 02	-4.063E 02	-2.750E 02	-1.313E 02	1.150E 03	8.522E 01	1.325E-02	6.087E 01	9.463E-03
4.040E 01	1.496E 01	1.281E 01	-3.165E 02	-4.301E 02	-2.895E 02	-1.406E 02	1.172E 03	9.664E 01	1.502E-02	8.273E 01	1.286E-02
4.041E 01	1.506E 01	1.299E 01	-3.165E 02	-4.314E 02	-2.903E 02	-1.411E 02	1.173E 03	9.726E 01	1.512E-02	8.392E 01	1.305E-02
4.073E 01	1.812E 01	1.686E 01	-3.190E 02	-4.734E 02	-3.163E 02	-1.571E 02	1.210E 03	1.170E 02	1.819E-02	1.218E 02	1.893E-02
4.122E 01	2.285E 01	1.937E 00	-3.453E 02	-5.403E 02	-3.590E 02	-1.814E 02	1.268E 03	1.476E 02	2.295E-02	1.251E 01	1.945E-03
4.150E 01	2.559E 01	2.003E 00	-3.778E 02	-5.802E 02	-3.850E 02	-1.951E 02	1.301E 03	1.653E 02	2.569E-02	1.294E 01	2.011E-03
4.246E 01	4.510E 01	2.226E 00	-5.230E 02	-7.425E 02	-4.788E 02	-2.636E 02	1.415E 03	2.913E 02	4.528E-02	1.438E 01	2.235E-03
4.270E 01	4.573E 01	2.283E 00	-5.656E 02	-7.911E 02	-5.033E 02	-2.878E 02	1.444E 03	2.953E 02	4.591E-02	1.474E 01	2.292E-03
4.271E 01	4.575E 01	2.285E 00	-5.673E 02	-7.931E 02	-5.043E 02	-2.889E 02	1.445E 03	2.955E 02	4.594E-02	1.476E 01	2.294E-03
4.278E 01	4.592E 01	2.300E 00	-5.784E 02	-8.067E 02	-5.108E 02	-2.958E 02	1.453E 03	2.966E 02	4.611E-02	1.485E 01	2.309E-03
4.431E 01	4.990E 01	2.594E 01	-7.491E 02	-1.161E 03	-6.627E 02	-4.983E 02	1.638E 03	3.223E 02	5.010E-02	1.676E 02	2.605E-02
4.480E 01	5.117E 01	3.350E 01	-7.810E 02	-1.205E 03	-7.103E 02	-5.746E 02	1.697E 03	3.305E 02	5.138E-02	2.164E 02	3.364E-02
4.550E 01	4.354E 01	4.425E 01	-7.983E 02	-1.460E 03	-7.761E 02	-6.835E 02	1.782E 03	2.812E 02	4.371E-02	2.856E 02	4.443E-02
4.621E 01	3.570E 01	3.978E 01	-7.632E 02	-1.631E 03	-8.406E 02	-7.908E 02	1.870E 03	2.306E 02	3.584E-02	2.569E 02	3.994E-02
4.626E 01	3.517E 01	3.948E 01	-7.594E 02	-1.642E 03	-8.448E 02	-7.976E 02	1.876E 03	2.272E 02	3.531E-02	2.550E 02	3.964E-02
4.731E 01	2.366E 01	3.291E 01	-6.674E 02	-1.875E 03	-9.341E 02	-9.407E 02	2.005E 03	1.528E 02	2.376E-02	2.126E 02	3.305E-02
4.811E 01	1.747E 01	2.791E 01	-5.791E 02	-2.043E 03	-9.980E 02	-1.045E 03	2.104E 03	1.129E 02	1.755E-02	1.803E 02	2.802E-02
5.019E 01	1.493E 01	1.493E 01	-3.555E 02	-2.407E 03	-1.148E 03	-1.259E 03	2.364E 03	9.640E 01	1.499E-02	9.640E 01	1.499E-02
5.072E 01	1.161E 01	1.161E 01	-3.168E 02	-2.477E 03	-1.182E 03	-1.295E 03	2.430E 03	7.500E 01	1.166E-02	7.500E 01	1.166E-02
5.213E 01	8.800E 00	8.800E 00	-2.433E 02	-2.633E 03	-1.266E 03	-1.367E 03	2.608E 03	5.683E 01	8.835E-03	5.683E 01	8.835E-03
5.423E 01	6.400E 00	6.400E 00	-1.597E 02	-2.823E 03	-1.372E 03	-1.451E 03	2.874E 03	4.133E 01	6.426E-03	4.133E 01	6.426E-03
5.473E 01	4.250E 00	4.250E 00	-1.458E 02	-2.863E 03	-1.394E 03	-1.469E 03	2.938E 03	2.745E 01	4.267E-03	2.745E 01	4.267E-03
5.548E 01	4.151E 00	4.151E 00	-1.296E 02	-2.917E 03	-1.424E 03	-1.493E 03	3.033E 03	2.681E 01	4.167E-03	2.681E 01	4.167E-03
5.576E 01	4.113E 00	4.113E 00	-1.236E 02	-2.936E 03	-1.434E 03	-1.501E 03	3.070E 03	2.656E 01	4.130E-03	2.656E 01	4.130E-03
5.624E 01	2.481E 00	4.050E 00	-7.427E 01	-2.965E 03	-1.452E 03	-1.513E 03	3.102E 03	1.602E 01	2.491E-03	2.616E 01	4.066E-03
5.766E 01	2.798E 00	2.798E 00	-4.990E 01	-3.037E 03	-1.500E 03	-1.537E 03	3.209E 03	1.807E 01	2.809E-03	1.807E 01	2.809E-03
5.772E 01	3.900E 00	2.749E 00	-4.911E 01	-3.040E 03	-1.502E 03	-1.537E 03	3.217E 03	2.519E 01	3.916E-03	1.776E 01	2.760E-03
5.786E 01	3.900E 00	2.626E 00	-4.736E 01	-3.045E 03	-1.506E 03	-1.539E 03	3.234E 03	2.519E 01	3.916E-03	1.696E 01	2.637E-03
5.794E 01	2.556E 00	2.556E 00	-4.632E 01	-3.048E 03	-1.509E 03	-1.540E 03	3.245E 03	1.651E 01	2.566E-03	1.651E 01	2.566E-03
5.844E 01	2.111E 00	2.111E 00	-4.101E 01	-3.066E 03	-1.522E 03	-1.544E 03	3.309E 03	1.364E 01	2.120E-03	1.364E 01	2.120E-03
5.917E 01	1.475E 00	1.475E 00	-3.614E 01	-3.089E 03	-1.540E 03	-1.550E 03	3.402E 03	9.526E 00	1.481E-03	9.526E 00	1.481E-03
6.019E 01	1.550E 00	1.550E 00	-3.264E 01	-3.117E 03	-1.559E 03	-1.557E 03	3.532E 03	1.001E 01	1.556E-03	1.001E 01	1.556E-03
6.220E 01	6.275E 00	6.275E 00	-3.173E 01	-3.161E 03	-1.586E 03	-1.575E 03	3.790E 03	4.053E 01	6.300E-03	4.053E 01	6.300E-03
6.362E 01	4.294E 00	4.294E 00	-3.173E 01	-3.190E 03	-1.600E 03	-1.590E 03	3.972E 03	2.773E 01	4.311E-03	2.773E 01	4.311E-03
6.608E 01	5.455E 00	5.455E 00	-3.173E 01	-3.249E 03	-1.629E 03	-1.620E 03	4.289E 03	3.523E 01	5.477E-03	3.523E 01	5.477E-03
6.646E 01	6.110E 00	5.632E 00	-3.173E 01	-3.259E 03	-1.634E 03	-1.626E 03	4.337E 03	3.946E 01	6.135E-03	3.637E 01	5.655E-03
6.650E 01	6.110E 00	5.651E 00	-3.173E 01	-3.261E 03	-1.634E 03	-1.627E 03	4.342E 03	3.946E 01	6.135E-03	3.649E 01	5.673E-03
6.670E 01	5.855E 00	5.745E 00	-3.173E 01	-3.266E 03	-1.637E 03	-1.630E 03	4.368E 03	3.781E 01	5.879E-03	3.710E 01	5.768E-03

ORIGINAL PAGE IS
OF POOR QUALITY

XABS	P-IH	P-OB	POA	QOX	S-IR	S-OB	CAPALT	P-IC/PSO	P-IH/PTO	P-OB/PSO	P-CB/PTO
6.836E 01	3.740E 00	3.695E 00	2.113E 01	-3.314E 03	-1.655E 03	-1.659E 03	4.584E 03	2.415E 01	3.755E-03	2.386E 01	3.710E-03
6.980E 01	2.640E 00	2.725E 00	1.750E 02	-3.350E 03	-1.668E 03	-1.688E 03	4.761E 03	1.705E 01	2.651E-03	1.760E 01	2.736E-03
7.052E 01	2.090E 00	2.240E 00	2.383E 02	-3.370E 03	-1.673E 03	-1.705E 03	4.849E 03	1.350E 01	2.099E-03	1.447E 01	2.249E-03
7.113E 01	1.625E 00	2.024E 00	2.817E 02	-3.395E 03	-1.677E 03	-1.718E 03	4.923E 03	1.049E 01	1.632E-03	1.307E 01	2.032E-03
7.251E 01	9.250E-01	1.536E 00	3.510E 02	-3.424E 03	-1.684E 03	-1.740E 03	5.009E 03	5.974E 00	9.287E-04	9.921E 00	1.542E-03
7.404E 01	9.113E-01	9.950E-01	4.023E 02	-3.447E 03	-1.690E 03	-1.757E 03	5.273E 03	5.886E 00	9.150E-04	6.426E 00	9.990E-04
7.419E 01	9.100E-01	8.975E-01	4.064E 02	-3.449E 03	-1.691E 03	-1.758E 03	5.291E 03	5.877E 00	9.137E-04	5.796E 00	9.011E-04
7.494E 01	8.126E-01	4.100E-01	4.312E 02	-3.461E 03	-1.693E 03	-1.768E 03	5.375E 03	5.248E 00	8.159E-04	2.648E 00	4.116E-04
7.494E 01	8.121E-01	4.074E-01	4.320E 02	-3.461E 03	-1.693E 03	-1.768E 03	5.375E 03	5.245E 00	8.154E-04	2.631E 00	4.090E-04
7.627E 01	6.400E-01	0.000	4.474E 02	-3.464E 03	-1.697E 03	-1.787E 03	5.427E 03	4.133E 00	6.426E-04	0.000	0.000
7.912E 01	4.350E-01	0.000	4.689E 02	-3.488E 03	-1.701E 03	-1.787E 03	5.525E 03	2.809E 00	4.367E-04	0.000	0.000
8.302E 01	5.550E-01	0.000	4.900E 02	-3.491E 03	-1.704E 03	-1.787E 03	5.630E 03	3.584E 00	5.572E-04	0.000	0.000
8.583E 01	5.000E-01	0.000	5.017E 02	-3.492E 03	-1.705E 03	-1.787E 03	5.665E 03	3.229E 00	5.020E-04	0.000	0.000
8.869E 01	6.050E-01	0.000	5.151E 02	-3.493E 03	-1.706E 03	-1.787E 03	5.707E 03	3.907E 00	6.074E-04	0.000	0.000
8.869E 01	6.052E-01	0.000	5.151E 02	-3.493E 03	-1.706E 03	-1.787E 03	5.707E 03	3.909E 00	6.077E-04	0.000	0.000

READING = 0090 BLOCK = 92 TIME = 206.225 MACH 7.5 PT = 995.997 TT = 2894.6

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.565E 01	8.565E 01	2.144E-03	3.417E-02
4.041E 01	1.674E-01	8.582E 01	2.877E-03	3.953E-02
4.073E 01	5.399E 00	9.122E 01	2.435E-03	5.347E-02
4.122E 01	8.023E 00	9.924E 01	2.672E-03	3.810E-02
4.150E 01	4.651E 00	1.039E 02	2.455E-03	4.299E-02
4.246E 01	1.392E 01	1.178E 02	2.716E-03	5.545E-02
4.270E 01	3.500E 00	1.213E 02	3.294E-03	4.802E-02
4.271E 01	1.412E-01	1.215E 02	2.829E-03	5.613E-02
4.278E 01	8.630E-01	1.223E 02	2.840E-03	5.566E-02
4.431E 01	1.732E 01	1.396E 02	3.110E-03	5.663E-02
4.480E 01	4.190E 00	1.438E 02	3.178E-03	5.506E-02
4.550E 01	5.404E 00	1.492E 02	3.209E-03	5.384E-02
4.621E 01	5.998E 00	1.552E 02	3.503E-03	4.723E-02
4.626E 01	4.249E-01	1.557E 02	3.170E-03	5.316E-02
4.731E 01	9.241E 00	1.649E 02	2.937E-03	5.198E-02
4.811E 01	7.370E 00	1.723E 02	2.914E-03	4.637E-02
5.019E 01	1.776E 01	1.900E 02	2.722E-03	3.619E-02
5.072E 01	4.287E 00	1.943E 02	2.945E-03	2.855E-02
5.213E 01	1.101E 01	2.053E 02	2.766E-03	2.409E-02
5.423E 01	1.402E 01	2.193E 02	2.703E-03	1.803E-02
5.473E 01	3.081E 00	2.224E 02	2.660E-03	1.415E-02
5.548E 01	4.231E 00	2.267E 02	2.339E-03	1.463E-02
5.576E 01	1.456E 00	2.281E 02	2.395E-03	1.445E-02
5.624E 01	1.149E 00	2.293E 02	2.315E-03	1.164E-02
5.766E 01	3.310E 00	2.326E 02	2.362E-03	1.011E-02
5.772E 01	2.103E-01	2.328E 02	2.378E-03	1.142E-02
5.786E 01	5.400E-01	2.333E 02	2.519E-03	1.067E-02
5.794E 01	3.655E-01	2.337E 02	3.133E-03	7.874E-03
5.844E 01	2.244E 00	2.359E 02	2.227E-03	8.417E-03
5.917E 01	2.594E 00	2.385E 02	2.043E-03	6.715E-03
6.019E 01	3.262E 00	2.418E 02	1.764E-03	7.489E-03
6.220E 01	6.271E 00	2.481E 02	2.258E-03	1.843E-02
6.362E 01	5.675E 00	2.537E 02	3.015E-03	1.137E-02
6.608E 01	1.078E 01	2.645E 02	2.769E-03	1.429E-02
6.646E 01	1.468E 00	2.660E 02	3.028E-03	1.376E-02
6.650E 01	1.570E-01	2.661E 02	3.144E-03	1.344E-02
6.670E 01	7.982E-01	2.669E 02	3.140E-03	1.332E-02
6.836E 01	6.225E 00	2.732E 02	3.043E-03	1.006E-02
6.980E 01	4.401E 00	2.776E 02	2.976E-03	8.062E-03
7.052E 01	1.922E 00	2.795E 02	2.936E-03	6.957E-03
7.113E 01	1.467E 00	2.810E 02	2.905E-03	6.158E-03
7.251E 01	2.831E 00	2.838E 02	2.835E-03	4.619E-03
7.404E 01	2.592E 00	2.864E 02	2.786E-03	3.810E-03
7.419E 01	2.203E-01	2.866E 02	2.776E-03	3.600E-03
7.494E 01	9.452E-01	2.875E 02	2.704E-03	2.717E-03
7.494E 01	1.590E-03	2.875E 02	2.704E-03	2.711E-03
7.627E 01	5.162E-01	2.881E 02	2.706E-03	2.806E-03
7.912E 01	8.778E-01	2.889E 02	2.626E-03	2.075E-03
8.302E 01	8.878E-01	2.898E 02	2.652E-03	2.486E-03
8.583E 01	4.795E-01	2.903E 02	2.621E-03	2.283E-03
8.869E 01	2.042E-01	2.905E 02	2.643E-03	2.629E-03
8.869E 01	0.000	2.905E 02	2.642E-03	2.630E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	228.	(LBF)
MEASURED THRUST	485.	(LBF)
CALCULATED SPECIFIC IMPULSE	906.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	1927.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.1552	
MEASURED THRUST COEFFICIENT	0.3304	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3372.	(LBF)
NET THRUST	424.	(LBF)
SPECIFIC IMPULSE	1665.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.2889	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.7	(LBF)
INLET MOMENTUM CHANGE	-402.1	(LBF)
COMBUSTOR FRICTION DRAG	180.3	(LBF)
COMBUSTOR STRUT DRAG	-3.24	(LBF)
COMBUSTOR MOMENTUM CHANGE	108.	(LBF)
NOZZLE FRICTION DRAG	24.53	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	522.	(LBF)
NOZZLE PRESSURE INTEGRAL	547.	(LBF)
EXTERNAL FRICTION DRAG	39.18	(LBF)
EXTERNAL PRESSURE INTEGRAL	-676.	(LBF)
TOTAL EXTERNAL DRAG	-715.	(LBF)
TOTAL STRUT DRAG	-3.24	(LBF)
CAVITY FORCE	-595.	(LBF)
CALCULATED LOAD CELL FORCE	-1063.	(LBF)
MEASURED LOAD CELL FORCE	-826.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE 0.0,	0.0,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7170	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.601	(IN)
NOZZLE SHROUD TRAILING EDGE	74.941	(IN)
NOZZLE PLUG TRAILING EDGE	88.693	(IN)
STRUT LEADING EDGE	57.857	(IN)
STRUT TRAILING EDGE	66.457	(IN)
COMBUSTOR EXIT	66.457	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9909	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1024	
DELTA PT2	0.0906	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3358	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1038	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9063	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9145	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9316	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8822	
ENTHALPY AT PO - SUPERSONIC	-42.13	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-7.51	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0159
EQUIVALENCE RATIO	0.480
COMBUSTOR EFFICIENCY	0.619
TOTAL PRESSURE RATIO	0.0736
COMBUSTOR EFFECTIVENESS	0.5576
INJECTOR DISCHARGE COEFFICIENTS	1.0811, 0.6565,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9873
NOZZLE COEFFICIENT - CT	0.9250
PROCESS EFFICIENCY	0.9870
KINETIC ENERGY EFFICIENCY	0.9727

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	E
1B	42.702	B
1C	44.300	
2A	50.177	
2C	46.250	
3A	55.467	
3B	57.652	
4	46.202	

Reading 90

$t = 212.52$ sec.

RAMJET PERFORMANCE

1-27-75
Reg. Corrected

S U M M A R Y   R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	A/A	*	A/AC	*UPTH	G	IVAL	PHI	ETAC
WIND TUNNEL		1	0 5														
0.000	995.999	2909	642.1(768)	1.2956	28.956	2544											
0.000	9.155	278	-462.4(68)	1.3957	28.955	816	7.280	5958	1.798	0.06203	15.743	0.9909	2945	5.724	187.0		
SPIKE TIP NS		2	0 7														
0.600	11.487	2909	642.1(768)	1.2956	28.955	2544											
0.600	10.691	2856	626.2(752)	1.2973	28.955	2522	0.354	892	2.105	0.06203	15.743	0.9909	3127	0.860	198.0		
WIND TUNNEL		3	0 0														
0.000	995.999	2909	642.1(768)	1.2956	28.956	2544											
0.000	0.171	286	-460.4(68)	1.3961	28.955	828	7.164	5929	1.798	0.06665	16.916	0.9909	3161	6.142	186.9		
SPIKE TIP NS		4	0 0														
0.600	11.487	2909	642.1(768)	1.2956	28.955	2544											
0.600	10.447	2846	623.4(750)	1.2976	28.955	2518	0.385	969	2.105	0.06665	16.916	0.9909	3161	1.004	186.9		
INLET THROAT		5	0 5														
40.400	339.898	2809	612.1(738)	1.2988	28.956	2503											
40.400	10.187	1171	156.5(285)	1.3679	28.955	1659	2.879	4775	1.862	0.77812	15.743	0.0790	2542	57.737	161.5		
INLET UPNRSK		6	0 3														
40.400	339.698	2809	612.1(738)	1.2988	28.956	2503											
40.400	8.787	1125	144.9(274)	1.3707	28.955	1628	2.971	4835	1.862	0.70739	15.743	0.0869	2561	53.155	162.7		
INLET DNNRSK		7	0 4														
40.400	103.237	2809	612.1(738)	1.2989	28.955	2503											
40.400	90.001	2721	586.0(713)	1.3017	28.955	2466	0.463	1141	1.943	0.70739	15.743	0.0869	2561	12.548	162.7		
COMBUSTOR	0	8	1 8														
40.410	201.445	2816	625.4(814)	1.3006	26.272	2633											
40.410	15.214	1493	215.5(406)	1.3507	26.272	1954	2.318	4529	2.058	0.78442	15.872	0.0790	2542	55.209	160.2	0.25	0.12
COMBUSTOR	0	9	2 5														
40.727	154.466	3067	622.6(891)	1.2889	26.548	2721											
40.727	20.072	1892	249.6(522)	1.3295	26.549	2171	1.990	4320	2.098	0.78726	15.872	0.0787	2536	52.659	159.8	0.25	0.31
COMBUSTOR	0	10	3 21														
41.217	205.052	2700	618.1(778)	1.3056	26.175	2588											
41.217	12.546	1345	202.8(365)	1.3598	26.174	1864	2.446	4559	2.046	0.78145	15.872	0.0793	2504	55.364	157.8	0.25	0.05
COMBUSTOR	0	11	4 21														
41.500	195.375	2639	615.5(759)	1.3083	26.120	2563											
41.500	13.814	1361	224.1(370)	1.3594	26.120	1876	2.358	4425	2.043	0.77359	15.872	0.0801	2467	53.201	155.4	0.25	0.01
COMBUSTOR	0	12	5 4														
42.460	96.860	2900	604.8(838)	1.2959	26.426	2659											
42.460	25.558	2116	355.2(592)	1.3225	26.426	2295	1.540	3534	2.119	0.72980	15.872	0.0849	2299	40.081	144.9	0.25	0.23
COMBUSTOR	0	13	6 15														
42.702	91.198	2532	615.8(769)	1.3145	23.916	2630											
42.702	25.707	1854	386.6(561)	1.3386	23.916	2271	1.491	3386	2.236	0.72678	15.998	0.0859	2250	38.247	140.6	0.49	0.02
COMBUSTOR	0	14	7 2														
42.712	91.040	2528	615.6(768)	1.3147	23.913	2629											
42.712	25.713	1852	387.1(560)	1.3367	23.913	2270	1.490	3382	2.236	0.72664	15.998	0.0860	2248	38.189	140.5	0.49	0.02
COMBUSTOR	0	15	8 3														
42.777	89.683	2507	614.8(761)	1.3157	23.895	2619											
42.777	25.753	1841	390.2(557)	1.3393	23.895	2265	1.480	3352	2.234	0.72484	15.998	0.0862	2235	37.754	139.7	0.49	0.01
COMBUSTOR	0	16	9 21														
44.310	66.214	2410	591.6(748)	1.3193	23.868	2573											
44.310	39.047	2118	492.2(649)	1.3293	23.868	2422	0.921	2231	2.246	0.67035	15.998	0.0932	2041	23.243	127.6	0.49	0.00
COMBUSTOR	0	17	10 21														
44.800	64.265	2382	583.5(739)	1.3203	23.864	2560											
44.800	43.296	2163	508.9(664)	1.3278	23.864	2446	0.790	1933	2.245	0.66162	15.998	0.0944	2008	19.880	125.5	0.49	0.00
COMBUSTOR	0	18	11 21														
45.497	63.650	2348	572.1(727)	1.3214	23.864	2543											
45.497	45.399	2162	508.7(664)	1.3278	23.863	2445	0.728	1782	2.241	0.65702	15.998	0.0951	1991	18.191	124.5	0.49	0.00

	P	T	H	GAMMA	MOLAT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.202	63.278	2315	562.8(724)	1.3229	23.574	2541											
46.202	39.416	2060	475.6(638)	1.3318	23.574	2405	0.868	2049	2.258	0.64085	16.017	0.0976	2025	20.807	126.4	0.53	0.01
COMBUSTOR	0	20	13 21														
46.212	63.439	2303	562.7(720)	1.3234	23.563	2536											
46.212	39.332	2046	475.1(633)	1.3324	23.563	2399	0.873	2094	2.256	0.64008	16.017	0.0977	2027	20.829	126.5	0.53	0.00
COMBUSTOR	0	21	14 21														
46.260	63.510	2299	562.0(719)	1.3235	23.562	2534											
46.260	38.924	2037	472.5(630)	1.3328	23.562	2393	0.864	2116	2.255	0.63813	16.017	0.0980	2030	20.983	126.8	0.53	0.00
COMBUSTOR	0	22	15 4														
47.310	62.514	2448	547.0(768)	1.3162	23.735	2598											
47.310	30.013	2046	409.3(631)	1.3303	23.735	2388	1.099	2625	2.274	0.59139	16.017	0.1097	2120	24.127	132.3	0.53	0.07
COMBUSTOR	0	23	16 4														
48.110	61.582	2580	536.2(811)	1.3098	23.886	2652											
48.110	24.018	2054	355.3(631)	1.3281	23.886	2383	1.262	3008	2.289	0.54363	16.017	0.1150	2205	25.415	137.7	0.53	0.14
COMBUSTOR	0	24	17 5														
50.187	54.356	2952	512.3(934)	1.2916	24.307	2793											
50.187	15.580	2205	250.4(675)	1.3175	24.308	2437	1.485	3620	2.331	0.40240	16.017	0.1554	2422	22.640	151.2	0.53	0.31
COMBUSTOR	0	25	18 4														
50.717	57.387	2840	507.6(896)	1.2967	24.210	2750											
50.717	12.050	1958	203.0(594)	1.3279	24.210	2311	1.689	3904	2.316	0.37635	16.017	0.1662	2456	22.832	153.4	0.53	0.27
COMBUSTOR	0	26	19 4														
52.127	53.123	2930	496.8(926)	1.2921	24.328	2782											
52.127	9.775	1964	162.0(595)	1.3263	24.329	2307	1.774	4093	2.329	0.32075	16.017	0.1950	2526	20.404	157.7	0.53	0.31
COMBUSTOR	0	27	20 4														
54.227	53.153	2870	482.1(909)	1.2945	24.209	2762											
54.227	6.675	1745	95.5(525)	1.3357	24.210	2188	2.010	4398	2.330	0.26359	16.060	0.2379	2602	18.018	162.0	0.54	0.30
COMBUSTOR	0	28	21 6														
54.727	78.712	2546	479.3(800)	1.3094	23.907	2633											
54.727	4.237	1218	38.6(361)	1.3662	23.907	1860	2.525	4696	2.267	0.25282	16.060	0.2480	2613	18.451	162.7	0.54	0.18
COMBUSTOR	0	29	22 4														
55.477	67.747	2632	475.4(829)	1.3053	23.999	2668											
55.477	4.368	1329	39.5(394)	1.3591	23.999	1935	2.414	4670	2.288	0.23832	16.060	0.2631	2626	17.297	163.5	0.54	0.22
COMBUSTOR	0	30	23 4														
55.760	64.264	2666	474.1(840)	1.3037	24.034	2681											
55.760	4.417	1372	40.0(408)	1.3564	24.034	1962	2.375	4661	2.295	0.23331	16.060	0.2688	2630	16.899	163.8	0.54	0.23
COMBUSTOR	0	31	24 4														
56.237	52.694	2758	471.9(871)	1.2993	24.128	2718											
56.237	3.522	1418	20.0(421)	1.3529	24.129	1988	2.392	4755	2.320	0.18437	16.060	0.3401	2681	13.625	166.9	0.54	0.27
COMBUSTOR	0	32	25 3														
57.662	53.650	2748	466.4(867)	1.2997	24.133	2712											
57.662	3.053	1354	-1.9(401)	1.3564	24.133	1945	2.489	4841	2.317	0.17047	16.060	0.3676	2704	12.824	168.4	0.54	0.27
COMBUSTOR	0	33	26 5														
57.717	39.565	2999	466.2(952)	1.2877	24.380	2806											
57.717	4.036	1744	33.4(523)	1.3338	24.381	2178	2.137	4654	2.362	0.16993	16.060	0.3690	2705	12.291	168.4	0.54	0.37
COMBUSTOR	0	34	27 3														
57.857	39.742	2991	465.8(949)	1.2881	24.373	2803											
57.857	3.965	1729	30.9(518)	1.3346	24.374	2170	2.150	4665	2.361	0.16874	16.060	0.3716	2706	12.233	168.5	0.54	0.37
COMBUSTOR	0	35	28 12														
57.937	60.566	2679	465.5(844)	1.3028	24.070	2685											
57.937	2.774	1240	-14.2(366)	1.3634	24.070	1869	2.621	4900	2.301	0.17066	16.060	0.3674	2707	12.995	168.5	0.54	0.25
COMBUSTOR	0	36	29 5														
58.443	78.682	2554	464.1(802)	1.3085	23.955	2634											
58.443	2.260	1032	-36.2(305)	1.3760	23.955	1717	2.919	5003	2.266	0.16981	16.060	0.3693	2711	13.203	168.6	0.54	0.20
COMBUSTOR	0	37	30 6														
59.167	136.891	2367	462.2(740)	1.3171	23.787	2553											
59.167	1.525	723	-66.8(212)	1.3919	23.787	1450	3.548	5145	2.200	0.16708	16.060	0.3753	2715	13.360	169.0	0.54	0.13

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              P      T       [illegible]         GAMMA [illegible]                          S        Z/A          K        AZ/C   [illegible]   C     [illegible]  ETAC
COMBUSTOR       0   38   31    4
60.187    131.515 2580  459.7( 744) 1.3184 23.[illegible] 2558
60.187      1.550  740  -60.6( 217) 1.3911 23.805 1468 3.508 5143 2.204 0.16002 15.960 0.3777   2717 13.268 169.2 0.54 0.14
COMBUSTOR       0   39   32    7
62.197     26.110 3562  455.0(1144) 1.2568 25.000 2984
62.197      6.550 2600  100.3( 801) 1.2937 25.013 2588 1.629 4213 2.424 0.17180 16.060 0.3650   2715 11.248 169.1 0.54 0.61
COMBUSTOR       0   40   33    5
63.617     33.893 3263  451.6(1041) 1.2739 24.090 2593
63.617      5.275 2136   52.0( 648) 1.3143 24.694 2378 1.881 4472 2.391 0.17645 16.060 0.3553   2712 12.262 168.9 0.54 0.49
COMBUSTOR       0   41   34    5
66.081     25.104 3753  444.7(1209) 1.2439 25.242 3032
66.081      7.535 2925  129.5( 911) 1.2768 25.265 2713 1.469 3972 2.441 0.16726 16.060 0.3749   2706 10.324 168.5 0.54 0.70
COMBUSTOR       0   42   35    3
66.457     23.232 3763  443.5(1212) 1.2428 25.257 3034
66.457      7.075 2944  130.8( 917) 1.2778 25.281 2720 1.454 3956 2.447 0.15549 16.060 0.4032   2705  9.559 168.4 0.54 0.71
COMBUSTOR  REGEN   43   36    4
66.457     23.232 4175  623.2(1365) 1.2176 25.203 3167
66.457      8.359 3441  317.0(1095) 1.2557 25.270 2916 1.343 3915 2.492 0.15549 16.060 0.4032   2817  9.459 175.4 0.54 0.71
NOZZLE  AE         44   37    5
88.693     23.232 3763  443.5(1185) 1.2428 25.257 3034
88.693      0.506 1589 -327.9( 462) 1.3321 25.283 2040 3.046 6213 2.447 0.03237 15.060 1.9371   3352  3.125 208.7 0.54 0.71
NOZZLE  PO         45   38    5
88.693     23.232 3763  443.5(1185) 1.2428 25.257 3034
88.693      0.155 1173 -455.7( 334) 1.3566 25.283 1769 3.792 6708 2.447 0.01448 16.060 4.3296   3520  1.510 219.2 0.54 0.71
NOZZLE  AE REGEN   46   39    5
88.693     23.232 4175  623.2(1365) 1.2176 25.203 3167
88.693      0.569 1883 -233.5( 557) 1.3180 25.283 2209 2.964 6547 2.492 0.03237 16.060 1.9371   3551  3.294 221.1 0.54 0.71
NOZZLE  PO REGEN   47   40    5
88.693     23.232 4175  623.2(1365) 1.2176 25.203 3167
88.693      0.155 1362 -398.4( 392) 1.3451 25.283 1898 3.767 7150 2.492 0.01329 16.060 4.7174   3756  1.477 233.9 0.54 0.71
FICTIVE COMBUSTR   65   58    0
66.457    339.698 4446  443.5(1450) 1.2176 26.058 3214
66.457      0.155  749 -846.4( 206) 1.3740 26.127 1399 5.741 8034 2.260 0.02807 16.060 2.2341   4099  3.504 255.2 0.54 1.00
FICTIVE NOZZLE     66   59    0
88.693     19.406 3711  422.7(1193) 1.2447 25.259 3015
88.693      0.546 1663 -304.3( 486) 1.3282 25.283 2084 2.894 6032 2.450 0.03237 16.060 1.9371   3261  3.034 204.3 0.54 0.71
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XABS	P-IR	P-OB	QDA	QOX	Q-IR	Q-OB	QWALL	P-IR/PSO	P-IR/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	6.600E-01	0.000	-2.772E-01	0.000	0.000	0.000	2.870E-02	4.265E 00	6.627E-04	0.000	0.000
1.836E 01	6.600E-01	0.000	-2.198E 01	0.000	0.000	0.000	1.534E 02	4.265E 00	6.627E-04	0.000	0.000
3.070E 01	1.060E 00	0.000	-9.170E 01	0.000	0.000	0.000	5.053E 02	6.849E 00	1.064E-03	0.000	0.000
3.508E 01	2.035E 00	0.000	-1.920E 02	0.000	0.000	0.000	6.804E 02	1.315E 01	2.043E-03	0.000	0.000
3.555E 01	2.240E 00	0.000	-2.115E 02	0.000	0.000	0.000	7.013E 02	1.447E 01	2.249E-03	0.000	0.000
3.606E 01	2.090E 00	0.000	-2.335E 02	-1.908E 02	-1.908E 02	0.000	7.246E 02	1.350E 01	2.098E-03	0.000	0.000
3.648E 01	2.268E 00	0.000	-2.521E 02	-1.954E 02	-1.954E 02	0.000	7.443E 02	1.466E 01	2.277E-03	0.000	0.000
3.659E 01	2.298E 00	3.160E 00	-2.902E 02	-1.967E 02	-1.967E 02	0.000	7.497E 02	1.485E 01	2.307E-03	2.042E 01	3.173E-03
3.660E 01	2.299E 00	3.177E 00	-2.903E 02	-1.968E 02	-1.968E 02	0.000	7.500E 02	1.486E 01	2.309E-03	2.053E 01	3.190E-03
3.701E 01	2.405E 00	4.350E 00	-2.925E 02	-2.015E 02	-2.015E 02	0.000	7.924E 02	1.554E 01	2.415E-03	2.811E 01	4.368E-03
3.727E 01	2.323E 00	5.087E 00	-2.922E 02	-2.046E 02	-2.046E 02	0.000	8.194E 02	1.501E 01	2.332E-03	3.287E 01	5.108E-03
3.803E 01	2.080E 00	8.681E 00	-2.746E 02	-2.143E 02	-2.143E 02	0.000	9.015E 02	1.344E 01	2.088E-03	5.609E 01	8.715E-03
3.873E 01	6.546E 00	1.196E 01	-2.709E 02	-2.840E 02	-2.307E 02	-5.328E 01	9.792E 02	4.230E 01	6.573E-03	7.730E 01	1.201E-02
3.875E 01	6.694E 00	1.192E 01	-2.711E 02	-2.859E 02	-2.315E 02	-5.441E 01	9.818E 02	4.325E 01	6.721E-03	7.701E 01	1.197E-02
3.901E 01	8.360E 00	1.141E 01	-2.748E 02	-3.088E 02	-2.416E 02	-6.721E 01	1.011E 03	5.402E 01	8.394E-03	7.373E 01	1.146E-02
3.950E 01	1.167E 01	1.046E 01	-2.898E 02	-3.565E 02	-2.673E 02	-9.123E 01	1.067E 03	7.541E 01	1.172E-02	6.756E 01	1.050E-02
3.975E 01	1.208E 01	9.975E 00	-2.980E 02	-3.871E 02	-2.838E 02	-1.033E 02	1.096E 03	7.803E 01	1.212E-02	6.445E 01	1.002E-02
4.000E 01	1.249E 01	1.006E 01	-3.044E 02	-4.191E 02	-3.035E 02	-1.156E 02	1.125E 03	8.071E 01	1.254E-02	6.498E 01	1.010E-02
4.022E 01	1.439E 01	1.012E 01	-3.110E 02	-4.481E 02	-3.220E 02	-1.262E 02	1.150E 03	9.295E 01	1.444E-02	6.542E 01	1.017E-02
4.040E 01	1.598E 01	1.414E 01	-3.160E 02	-4.731E 02	-3.380E 02	-1.351E 02	1.172E 03	1.033E 02	1.605E-02	9.135E 01	1.419E-02
4.041E 01	1.607E 01	1.436E 01	-3.161E 02	-4.745E 02	-3.389E 02	-1.355E 02	1.173E 03	1.038E 02	1.614E-02	9.277E 01	1.441E-02
4.073E 01	1.884E 01	2.131E 01	-3.166E 02	-5.187E 02	-3.678E 02	-1.509E 02	1.210E 03	1.217E 02	1.891E-02	1.377E 02	2.139E-02
4.122E 01	2.312E 01	1.975E 00	-3.406E 02	-5.893E 02	-4.151E 02	-1.742E 02	1.268E 03	1.494E 02	2.321E-02	1.276E 01	1.983E-03
4.150E 01	2.559E 01	2.041E 00	-3.733E 02	-6.314E 02	-4.440E 02	-1.874E 02	1.301E 03	1.653E 02	2.569E-02	1.319E 01	2.050E-03
4.246E 01	4.885E 01	2.266E 00	-5.266E 02	-8.018E 02	-5.481E 02	-2.537E 02	1.415E 03	3.156E 02	4.905E-02	1.464E 01	2.275E-03
4.270E 01	4.909E 01	2.323E 00	-5.728E 02	-8.524E 02	-5.752E 02	-2.772E 02	1.444E 03	3.172E 02	4.929E-02	1.501E 01	2.332E-03
4.271E 01	4.910E 01	2.325E 00	-5.746E 02	-8.546E 02	-5.763E 02	-2.783E 02	1.445E 03	3.173E 02	4.930E-02	1.503E 01	2.335E-03
4.278E 01	4.916E 01	2.341E 00	-5.865E 02	-8.686E 02	-5.835E 02	-2.851E 02	1.453E 03	3.177E 02	4.936E-02	1.512E 01	2.350E-03
4.431E 01	5.069E 01	2.741E 01	-7.632E 02	-1.236E 03	-7.518E 02	-4.861E 02	1.638E 03	3.275E 02	5.089E-02	1.771E 02	2.752E-02
4.480E 01	5.117E 01	3.542E 01	-7.920E 02	-1.367E 03	-8.044E 02	-5.629E 02	1.697E 03	3.307E 02	5.138E-02	2.288E 02	3.556E-02
4.550E 01	4.399E 01	4.681E 01	-8.038E 02	-1.550E 03	-8.772E 02	-6.724E 02	1.782E 03	2.842E 02	4.416E-02	3.025E 02	4.700E-02
4.620E 01	3.672E 01	4.212E 01	-7.645E 02	-1.726E 03	-9.477E 02	-7.783E 02	1.869E 03	2.372E 02	3.686E-02	2.721E 02	4.229E-02
4.621E 01	3.661E 01	4.205E 01	-7.630E 02	-1.728E 03	-9.487E 02	-7.798E 02	1.870E 03	2.366E 02	3.676E-02	2.717E 02	4.222E-02
4.626E 01	3.612E 01	4.173E 01	-7.589E 02	-1.740E 03	-9.534E 02	-7.866E 02	1.876E 03	2.334E 02	3.626E-02	2.696E 02	4.190E-02
4.731E 01	2.529E 01	3.474E 01	-5.606E 02	-1.981E 03	-1.053E 03	-9.280E 02	2.005E 03	1.634E 02	2.539E-02	2.245E 02	3.488E-02
4.811E 01	1.862E 01	2.941E 01	-5.679E 02	-2.154E 03	-1.124E 03	-1.030E 03	2.104E 03	1.203E 02	1.870E-02	1.900E 02	2.953E-02
5.019E 01	1.558E 01	1.558E 01	-3.331E 02	-2.536E 03	-1.292E 03	-1.245E 03	2.364E 03	1.007E 02	1.564E-02	1.007E 02	1.564E-02
5.072E 01	1.205E 01	1.205E 01	-2.949E 02	-2.612E 03	-1.331E 03	-1.281E 03	2.430E 03	7.786E 01	1.210E-02	7.786E 01	1.210E-02
5.213E 01	9.775E 00	9.775E 00	-2.142E 02	-2.784E 03	-1.426E 03	-1.358E 03	2.608E 03	6.316E 01	9.814E-03	6.316E 01	9.814E-03
5.423E 01	6.675E 00	6.675E 00	-1.237E 02	-2.945E 03	-1.547E 03	-1.448E 03	2.874E 03	4.313E 01	6.702E-03	4.313E 01	6.702E-03
5.473E 01	4.237E 00	4.237E 00	-1.095E 02	-3.040E 03	-1.572E 03	-1.468E 03	2.938E 03	2.738E 01	4.255E-03	2.738E 01	4.255E-03
5.548E 01	4.368E 00	4.368E 00	-9.285E 01	-3.102E 03	-1.607E 03	-1.495E 03	3.033E 03	2.822E 01	4.385E-03	2.822E 01	4.385E-03
5.576E 01	4.417E 00	4.417E 00	-8.649E 01	-3.124E 03	-1.619E 03	-1.504E 03	3.070E 03	2.854E 01	4.435E-03	2.854E 01	4.435E-03
5.624E 01	2.544E 00	4.500E 00	-3.527E 01	-3.159E 03	-1.640E 03	-1.519E 03	3.102E 03	1.644E 01	2.554E-03	2.908E 01	4.518E-03
5.766E 01	3.053E 00	3.053E 00	-8.395E 00	-3.247E 03	-1.695E 03	-1.551E 03	3.209E 03	1.973E 01	3.065E-03	1.973E 01	3.065E-03
5.772E 01	5.075E 00	2.997E 00	-7.536E 00	-3.250E 03	-1.697E 03	-1.552E 03	3.217E 03	3.279E 01	5.095E-03	1.937E 01	3.009E-03
5.786E 01	5.075E 00	2.855E 00	-5.629E 00	-3.257E 03	-1.702E 03	-1.555E 03	3.234E 03	3.279E 01	5.095E-03	1.845E 01	2.867E-03
5.794E 01	2.774E 00	2.774E 00	-4.499E 00	-3.261E 03	-1.705E 03	-1.556E 03	3.245E 03	1.792E 01	2.785E-03	1.792E 01	2.785E-03
5.844E 01	2.260E 00	2.260E 00	1.236E 00	-3.284E 03	-1.721E 03	-1.564E 03	3.309E 03	1.460E 01	2.269E-03	1.460E 01	2.269E-03
5.917E 01	1.525E 00	1.525E 00	6.367E 00	-3.314E 03	-1.741E 03	-1.574E 03	3.402E 03	9.854E 00	1.531E-03	9.854E 00	1.531E-03
6.019E 01	1.550E 00	1.550E 00	9.928E 00	-3.354E 03	-1.764E 03	-1.590E 03	3.532E 03	1.002E 01	1.556E-03	1.002E 01	1.556E-03
6.220E 01	6.550E 00	6.550E 00	1.087E 01	-3.431E 03	-1.797E 03	-1.634E 03	3.790E 03	4.232E 01	6.576E-03	4.232E 01	6.576E-03
6.362E 01	5.275E 00	5.275E 00	1.087E 01	-3.485E 03	-1.816E 03	-1.669E 03	3.972E 03	3.408E 01	5.296E-03	3.408E 01	5.296E-03
6.608E 01	7.535E 00	7.535E 00	1.087E 01	-3.596E 03	-1.854E 03	-1.742E 03	4.269E 03	4.869E 01	7.565E-03	4.869E 01	7.565E-03
6.646E 01	6.270E 00	7.880E 00	1.087E 01	-3.615E 03	-1.860E 03	-1.755E 03	4.337E 03	4.051E 01	6.295E-03	5.092E 01	7.912E-03
6.650E 01	6.270E 00	7.917E 00	1.087E 01	-3.617E 03	-1.861E 03	-1.756E 03	4.342E 03	4.051E 01	6.295E-03	5.115E 01	7.948E-03

XABS	P-IP	F-QH	HPA	T-K	Q-IR	Q-IG	CA-ACI	P-IR/PSO	F-IB/PIO	P-QC/PSO	P-CH/PIO
6.670E 01	6.144E 00	4.100E 00	1.047E 01	-3.820E 03	-1.864E 03	-1.7?3E 03	4.506E 03	5.970E 01	6.108E-03	5.234E 01	8.133E-03
6.836E 01	5.095E 00	4.235E 00	7.732E 01	-3.700E 03	-1.889E 03	-1.816E 03	4.584E 03	5.292E 01	5.115E-03	2.769E 01	4.302E-03
6.980E 01	2.755E 00	2.955E 00	2.595E 02	-3.761E 03	-1.906E 03	-1.855E 03	4.761E 03	1.780E 01	2.766E-03	1.909E 01	2.967E-03
7.052E 01	2.141E 00	2.290E 00	3.256E 02	-3.786E 03	-1.913E 03	-1.873E 03	4.849E 03	1.383E 01	2.149E-03	1.480E 01	2.299E-03
7.113E 01	1.620E 00	2.071E 00	3.697E 02	-3.806E 03	-1.918E 03	-1.888E 03	4.923E 03	1.047E 01	1.627E-03	1.538E 01	2.079E-03
7.251E 01	9.550E-01	1.575E 00	4.402E 02	-3.844E 03	-1.929E 03	-1.917E 03	5.039E 03	6.171E 00	9.568E-04	1.018E 01	1.581E-03
7.404E 01	9.231E-01	1.025E 00	4.925E 02	-3.879E 03	-1.938E 03	-1.940E 03	5.273E 03	5.965E 00	9.268E-04	6.623E 00	1.029E-03
7.419E 01	9.200E-01	9.225E-01	4.969E 02	-3.882E 03	-1.939E 03	-1.943E 03	5.291E 03	5.945E 00	9.237E-04	5.961E 00	9.262E-04
7.494E 01	8.335E-01	4.100E-01	5.222E 02	-3.897E 03	-1.943E 03	-1.955E 03	5.375E 03	5.385E 00	8.368E-04	2.649E 00	4.116E-04
7.494E 01	8.330E-01	4.072E-01	5.230E 02	-3.897E 03	-1.943E 03	-1.955E 03	5.375E 03	5.382E 00	8.363E-04	2.631E 00	4.089E-04
7.627E 01	6.800E-01	0.000	5.390E 02	-3.928E 03	-1.948E 03	-1.980E 03	5.427E 03	4.394E 00	6.827E-04	0.000	0.000
7.912E 01	4.850E-01	0.000	5.623E 02	-3.935E 03	-1.955E 03	-1.980E 03	5.525E 03	3.134E 00	4.869E-04	0.000	0.000
8.302E 01	5.850E-01	0.000	5.852E 02	-3.941E 03	-1.960E 03	-1.980E 03	5.630E 03	3.780E 00	5.873E-04	0.000	0.000
8.583E 01	5.450E-01	0.000	5.977E 02	-3.943E 03	-1.963E 03	-1.980E 03	5.685E 03	3.522E 00	5.472E-04	0.000	0.000
8.869E 01	6.700E-01	0.000	6.124E 02	-3.948E 03	-1.968E 03	-1.980E 03	5.707E 03	4.329E 00	6.727E-04	0.000	0.000
8.869E 01	6.705E-01	0.000	6.124E 02	-3.948E 03	-1.968E 03	-1.980E 03	5.707E 03	4.331E 00	6.730E-04	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.569E 01	8.864E 01	2.138E-03	3.592E-02
4.041E 01	1.566E-01	8.881E 01	2.890E-03	4.175E-02
4.073E 01	5.418E 00	9.222E 01	2.514E-03	5.507E-02
4.122E 01	9.201E 00	1.004E 02	2.748E-03	5.786E-02
4.150E 01	4.733E 00	1.052E 02	2.471E-03	4.591E-02
4.246E 01	1.389E 01	1.190E 02	2.749E-03	5.763E-02
4.270E 01	3.460E 00	1.225E 02	3.361E-03	4.959E-02
4.271E 01	1.399E-01	1.226E 02	2.878E-03	5.773E-02
4.278E 01	8.532E-01	1.235E 02	2.888E-03	5.735E-02
4.431E 01	1.702E 01	1.405E 02	3.153E-03	5.609E-02
4.480E 01	4.078E 00	1.446E 02	3.209E-03	5.447E-02
4.550E 01	5.223E 00	1.498E 02	3.240E-03	5.326E-02
4.620E 01	5.416E 00	1.552E 02	3.191E-03	5.394E-02
4.621E 01	8.140E-02	1.553E 02	3.143E-03	5.466E-02
4.626E 01	3.837E-01	1.557E 02	3.128E-03	5.503E-02
4.731E 01	8.873E 00	1.646E 02	2.947E-03	5.379E-02
4.811E 01	7.211E 00	1.718E 02	2.927E-03	4.819E-02
5.019E 01	1.764E 01	1.894E 02	2.737E-03	3.755E-02
5.072E 01	4.311E 00	1.937E 02	2.967E-03	2.950E-02
5.213E 01	1.106E 01	2.048E 02	2.794E-03	2.601E-02
5.423E 01	1.424E 01	2.190E 02	2.772E-03	1.934E-02
5.473E 01	3.174E 00	2.222E 02	2.691E-03	1.425E-02
5.548E 01	4.303E 00	2.265E 02	2.334E-03	1.565E-02
5.576E 01	1.478E 00	2.280E 02	2.437E-03	1.529E-02
5.624E 01	1.181E 00	2.292E 02	2.376E-03	1.230E-02
5.766E 01	3.417E 00	2.326E 02	2.423E-03	1.078E-02
5.772E 01	2.167E-01	2.328E 02	2.475E-03	1.302E-02
5.786E 01	5.633E-01	2.334E 02	2.695E-03	1.214E-02
5.794E 01	3.877E-01	2.337E 02	3.311E-03	8.117E-03
5.844E 01	2.368E 00	2.361E 02	2.293E-03	8.845E-03
5.917E 01	2.698E 00	2.388E 02	2.094E-03	6.899E-03
6.019E 01	3.363E 00	2.422E 02	1.770E-03	7.573E-03
6.220E 01	6.363E 00	2.485E 02	2.255E-03	1.923E-02
6.362E 01	5.674E 00	2.542E 02	3.044E-03	1.314E-02
6.608E 01	1.073E 01	2.649E 02	2.966E-03	1.671E-02
6.646E 01	1.493E 00	2.664E 02	3.258E-03	1.451E-02
6.650E 01	1.606E-01	2.666E 02	3.288E-03	1.460E-02
6.670E 01	8.065E-01	2.674E 02	3.287E-03	1.402E-02
6.836E 01	6.479E 00	2.739E 02	3.195E-03	1.152E-02
6.980E 01	4.619E 00	2.785E 02	3.103E-03	8.549E-03
7.052E 01	1.954E 00	2.805E 02	3.057E-03	7.007E-03
7.113E 01	1.476E 00	2.819E 02	3.025E-03	6.155E-03
7.251E 01	2.860E 00	2.848E 02	2.959E-03	4.675E-03
7.404E 01	2.635E 00	2.874E 02	2.912E-03	3.844E-03
7.419E 01	2.238E-01	2.876E 02	2.902E-03	3.607E-03
7.494E 01	9.604E-01	2.886E 02	2.834E-03	2.734E-03
7.494E 01	1.617E-03	2.886E 02	2.834E-03	2.729E-03
7.627E 01	5.322E-01	2.891E 02	2.842E-03	2.920E-03
7.912E 01	9.317E-01	2.901E 02	2.772E-03	2.241E-03
8.302E 01	9.409E-01	2.910E 02	2.786E-03	2.571E-03
8.583E 01	5.046E-01	2.915E 02	2.761E-03	2.422E-03
8.869E 01	2.183E-01	2.917E 02	2.783E-03	2.824E-03
8.869E 01	0.000	2.917E 02	2.783E-03	2.825E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	336.	(LBF)
MEASURED THRUST	595.	(LBF)
CALCULATED SPECIFIC IMPULSE	1194.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2113.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.2295	
MEASURED THRUST COEFFICIENT	0.4061	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3476.	(LBF)
NET THRUST	531.	(LBF)
SPECIFIC IMPULSE	1885.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.3619	

MOMENTUM AND FORCES

INLET FRICTION DRAG	86.6	(LBF)
INLET MOMENTUM CHANGE	-402.6	(LBF)
COMBUSTOR FRICTION DRAG	179.8	(LBF)
COMBUSTOR STRUT DRAG	-15.85	(LBF)
COMBUSTOR MOMENTUM CHANGE	163.	(LBF)
NOZZLE FRICTION DRAG	25.30	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	576.	(LBF)
NOZZLE PRESSURE INTEGRAL	602.	(LBF)
EXTERNAL FRICTION DRAG	39.31	(LBF)
EXTERNAL PRESSURE INTEGRAL	-677.	(LBF)
TOTAL EXTERNAL DRAG	-717.	(LBF)
TOTAL STRUT DRAG	-15.85	(LBF)
CAVITY FORCE	-730.	(LBF)
CALCULATED LOAD CELL FORCE	-1110.	(LBF)
MEASURED LOAD CELL FORCE	-852.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0, 0.0,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7170	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.601	(IN)
NOZZLE SHROUD TRAILING EDGE	74.941	(IN)
NOZZLE PLUG TRAILING EDGE	88.693	(IN)
STRUT LEADING EDGE	57.857	(IN)
STRUT TRAILING EDGE	66.457	(IN)
COMBUSTOR EXIT	66.457	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9969	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1023	
DELTA PT2	0.0901	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3411	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1037	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9062	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9149	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9288	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8790	
ENTHALPY AT PO - SUPERSONIC	-42.34	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-7.22	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0179
EQUIVALENCE RATIO	0.539
COMBUSTOR EFFICIENCY	0.706
TOTAL PRESSURE RATIO	0.0684
COMBUSTOR EFFECTIVENESS	0.6267
INJECTOR DISCHARGE COEFFICIENTS	1.0257, 0.6753, 1.2222,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9769
NOZZLE COEFFICIENT - CT	0.9104
PROCESS EFFICIENCY	0.9686
KINETIC ENERGY EFFICIENCY	0.9542

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	E
1B	42.702	B
1C	44.300	
2A	50.177	
2C	46.250	
3A	55.467	
3B	57.652	
4	46.202	C

Reading 90

t = 217.02 sec.

READING = 0090 BLOCK = 104 TIME = 217.023 MACH 7.3 PT = 995.999 TT = 2919.2 PAGE 1

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RAMJET PERFORMANCE

S U M M A R Y R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	R	IVAC	PHI	ETAC
WIND TUNNEL		1	0 5														
0.000	995.999	2919	645.2(771)	1.2953	28.956	2548											
0.000	0.155	279	-62.1(67)	1.3958	28.955	817	7.279	5949	1.799	0.06187	15.697	0.9906	2942	5.720	187.4		
SPIKE TIP NS		2	0 7														
0.600	11.425	2919	645.2(771)	1.2952	28.955	2548											
0.600	10.534	2866	629.1(755)	1.2970	28.955	2526	0.356	898	2.106	0.06187	15.697	0.9906	3111	0.863	198.2		
WIND TUNNEL		3	0 0														
0.000	995.999	2919	645.2(771)	1.2953	28.956	2548											
0.000	0.170	286	-60.3(69)	1.3961	28.955	829	7.171	5942	1.799	0.06615	16.784	0.9906	3143	6.108	187.2		
SPIKE TIP NS		4	0 0														
0.600	11.425	2919	645.2(771)	1.2952	28.955	2548											
0.600	10.390	2856	626.4(752)	1.2978	28.955	2522	0.385	971	2.106	0.06615	16.784	0.9906	3143	0.998	187.2		
INLET THROAT		5	0 3														
40.400	97.791	2751	594.8(722)	1.3007	28.955	2479											
40.400	24.535	1977	372.1(501)	1.3268	28.955	2122	1.573	3338	1.941	0.77631	15.697	0.0789	2125	40.268	135.3		
INLET UPNRSK		6	0 3														
40.400	97.791	2751	594.8(722)	1.3007	28.958	2479											
40.400	20.048	1880	345.4(474)	1.3303	28.955	2072	1.705	3533	1.941	0.70574	15.697	0.0868	2169	38.744	138.2		
INLET DNNRSK		7	0 4														
40.400	82.576	2751	594.8(722)	1.3007	28.955	2479											
40.400	64.125	2595	548.4(676)	1.3058	28.955	2411	0.632	1523	1.952	0.70574	15.697	0.0868	2169	16.706	138.2		
COMBUSTOR		0 8	1 21														
40.410	83.409	2710	609.5(782)	1.3048	26.177	2591											
40.410	23.796	2004	386.5(560)	1.3290	26.177	2249	1.485	3340	2.116	0.78268	15.828	0.0790	2125	40.630	134.2	0.25	0.07
COMBUSTOR		0 9	2 21														
40.729	87.504	2614	606.3(792)	1.3091	26.089	2584											
40.729	24.252	1913	386.6(534)	1.3333	26.089	2205	1.504	3316	2.103	0.78555	15.828	0.0787	2120	40.481	133.9	0.25	0.01
COMBUSTOR		0 10	3 21														
41.219	71.680	2585	601.3(743)	1.3102	26.076	2541											
41.219	13.470	1718	330.6(474)	1.3414	26.076	2094	1.758	3680	2.115	0.77969	15.828	0.0793	2084	44.595	131.7	0.25	0.00
COMBUSTOR		0 11	4 21														
41.500	66.629	2574	598.4(740)	1.3106	26.074	2536											
41.500	13.818	1749	341.8(485)	1.3399	26.074	2114	1.695	3583	2.119	0.77188	15.828	0.0801	2046	42.978	129.3	0.25	0.00
COMBUSTOR		0 12	5 21														
42.460	44.416	3605	587.3(1057)	1.2585	27.242	2878											
42.460	23.478	3152	430.3(909)	1.2762	27.251	2709	1.034	2802	2.219	0.72876	15.828	0.0848	1889	31.737	119.3	0.25	0.81
COMBUSTOR		0 13	6 21														
42.704	47.730	2668	598.4(830)	1.3076	24.171	2679											
42.704	23.490	2251	455.3(688)	1.3218	24.171	2474	1.082	2676	2.297	0.72466	15.946	0.0859	1843	30.132	116.6	0.48	0.10
COMBUSTOR		0 14	7 21														
42.714	50.502	2466	598.3(764)	1.3169	23.983	2594											
42.714	23.490	2044	455.6(622)	1.3315	23.983	2375	1.125	2672	2.270	0.72453	15.946	0.0859	1841	30.083	115.5	0.48	0.01
COMBUSTOR		0 15	8 21														
42.779	50.204	2433	597.5(783)	1.3184	23.955	2580											
42.779	23.494	2019	457.6(614)	1.3328	23.955	2363	1.119	2646	2.266	0.72279	15.946	0.0861	1830	29.718	114.7	0.48	0.00
COMBUSTOR		0 16	9 21														
44.300	42.847	2361	584.4(768)	1.3221	22.695	2615											
44.300	31.072	2182	520.6(704)	1.3283	22.695	2520	0.709	1788	2.368	0.67180	16.031	0.0932	1632	18.666	101.8	0.65	0.02
COMBUSTOR		0 17	10 21														
44.310	43.135	2310	584.3(751)	1.3245	22.652	2591											
44.310	31.122	2131	520.8(687)	1.3307	22.652	2495	0.715	1784	2.361	0.67094	16.031	0.0933	1632	18.596	101.8	0.65	0.00
COMBUSTOR		0 18	11 21														
44.800	43.024	2289	579.5(743)	1.3253	22.646	2581											
44.800	33.564	2153	531.1(695)	1.3300	22.646	2507	0.620	1556	2.358	0.66342	16.031	0.0943	1586	16.042	99.0	0.65	0.00

READING = 0090 BLOCK = 104 TIME = 217.023 MACH 7.3 PT = 995.999 TT = 2919.2

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	V/A	A	A/AC	NOMIM	C	TVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
45.499	41.703	2269	572.9(736)	1.3260	22.645	2570											
45.499	33.236	2146	528.9(693)	1.3303	22.645	2503	0.592	1483	2.357	0.65907	16.031	0.0950	1547	15.190	96.5	0.65	0.00
COMBUSTOR	0	20	13 21														
46.204	37.279	2261	578.3(770)	1.3274	21.542	2632											
46.204	27.968	2106	520.4(712)	1.3329	21.542	2545	0.668	1702	2.462	0.64469	16.115	0.0976	1551	17.049	96.3	0.81	0.01
COMBUSTOR	0	21	14 21														
46.214	37.483	2214	578.2(753)	1.3296	21.504	2609											
46.214	27.894	2057	520.1(695)	1.3352	21.504	2520	0.677	1706	2.455	0.64409	16.115	0.0977	1552	17.073	96.3	0.81	0.00
COMBUSTOR	0	22	15 21														
46.260	37.242	2206	577.7(750)	1.3300	21.498	2605											
46.260	27.550	2046	518.5(691)	1.3357	21.498	2514	0.685	1721	2.454	0.64221	16.115	0.0980	1554	17.180	96.4	0.81	0.00
COMBUSTOR	0	23	16 21														
47.310	31.780	2177	567.4(740)	1.3310	21.497	2569											
47.310	19.704	1931	476.8(649)	1.3400	21.497	2446	0.871	2130	2.464	0.59530	16.115	0.1057	1601	19.709	99.3	0.81	0.00
COMBUSTOR	0	24	17 21														
48.110	25.389	3589	559.5(1255)	1.2602	22.767	3143											
48.110	18.347	3354	461.5(1163)	1.2701	22.773	3050	0.726	2216	2.619	0.54715	16.115	0.1150	1651	18.840	102.4	0.81	0.41
COMBUSTOR	0	25	18 21														
50.189	23.624	2333	542.3(794)	1.3229	21.678	2660											
50.189	11.354	1945	399.0(651)	1.3370	21.678	2442	1.097	2678	2.511	0.40488	16.115	0.1554	1793	16.650	111.3	0.81	0.06
COMBUSTOR	0	26	19 21														
50.719	23.207	2134	539.1(723)	1.3322	21.524	2562											
50.719	9.275	1690	377.8(562)	1.3492	21.524	2295	1.238	2841	2.485	0.37866	16.115	0.1662	1818	16.716	112.8	0.81	0.01
COMBUSTOR	0	27	20 21														
52.129	22.472	2085	531.4(705)	1.3342	21.501	2536											
52.129	8.300	1616	361.9(536)	1.3528	21.501	2248	1.296	2913	2.480	0.32272	16.115	0.1950	1873	14.607	116.2	0.81	0.00
COMBUSTOR	0	28	21 21														
54.229	19.000	2048	519.6(694)	1.3357	21.428	2519											
54.229	5.350	1477	314.0(489)	1.3594	21.428	2159	1.486	3207	2.495	0.26520	16.158	0.2379	1937	13.219	119.9	0.82	0.00
COMBUSTOR	0	29	22 21														
54.729	16.512	2038	517.4(691)	1.3361	21.424	2514											
54.729	3.862	1399	288.2(461)	1.3634	21.424	2104	1.610	3387	2.507	0.25436	16.158	0.2480	1946	13.357	120.4	0.82	0.00
COMBUSTOR	0	30	23 21														
55.479	16.529	2028	514.2(687)	1.3364	21.424	2508											
55.479	3.869	1392	286.1(459)	1.3637	21.424	2099	1.610	3378	2.505	0.23978	16.158	0.2631	1957	12.588	121.1	0.82	0.00
COMBUSTOR	0	31	24 21														
55.760	16.533	2025	513.1(686)	1.3366	21.424	2506											
55.760	3.871	1390	285.4(458)	1.3638	21.424	2097	1.609	3375	2.504	0.23477	16.158	0.2687	1961	12.314	121.4	0.82	0.00
COMBUSTOR	0	32	25 21														
56.239	13.259	2147	511.4(729)	1.3307	21.525	2569											
56.239	3.169	1488	273.4(491)	1.3578	21.525	2161	1.597	3450	2.543	0.18550	16.158	0.3401	2009	9.947	124.3	0.82	0.03
COMBUSTOR	0	33	26 21														
57.664	13.852	2028	507.1(687)	1.3363	21.439	2507											
57.664	2.769	1334	259.3(439)	1.3665	21.439	2056	1.713	3521	2.521	0.17145	16.158	0.3679	2029	9.382	125.6	0.82	0.00
COMBUSTOR	0	34	27 21														
57.719	14.958	2011	507.0(681)	1.3370	21.426	2498											
57.719	3.275	1355	272.4(446)	1.3659	21.426	2072	1.653	3426	2.511	0.17097	16.158	0.3690	2030	9.102	125.6	0.82	0.00
COMBUSTOR	0	35	28 21														
57.859	14.891	2008	506.6(680)	1.3372	21.424	2496											
57.859	3.221	1349	270.9(444)	1.3659	21.424	2067	1.661	3434	2.511	0.16974	16.158	0.3717	2031	9.058	125.7	0.82	0.00
COMBUSTOR	0	36	29 21														
57.939	13.727	2010	506.4(680)	1.3371	21.426	2497											
57.939	2.555	1297	252.0(426)	1.3685	21.426	2029	1.758	3568	2.519	0.17173	16.158	0.3673	2032	9.521	125.8	0.82	0.00
COMBUSTOR	0	37	30 21														
58.445	12.881	2004	505.2(678)	1.3373	21.424	2494											
58.445	2.162	1257	239.3(413)	1.3705	21.424	1999	1.824	3647	2.523	0.17084	16.158	0.3693	2036	9.683	126.0	0.82	0.00

ORIGINAL PAGE IS
OF POOR QUALITY

READING = 0090 BLOCK = 104 TIME = 217.023 MACH 7.3 PT = 995.999 TT = 2919.2 PAGE 5

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	*	A/AC	MOMTM	F	IVAC	PHI	ETAC
COMBUSTOR	0	38	31 21														
59.169	11.018	1999	503.6(676)	1.3375	21.424	2491											
59.169	1.600	1206	221.9(395)	1.3731	21.424	1960	1.916	3755	2.537	0.16811	16.158	0.3753	2039	9.809	126.2	0.82	0.00
COMBUSTOR	0	39	32 21														
60.189	12.957	2295	501.3(781)	1.3235	21.667	2640											
60.189	3.800	1687	278.8(559)	1.3468	21.667	2283	1.461	3336	2.564	0.16703	16.158	0.3777	2043	8.661	126.5	0.82	0.08
COMBUSTOR	0	40	33 21														
62.199	17.331	2024	496.1(685)	1.3361	21.460	2503											
62.199	6.487	1573	333.2(522)	1.3545	21.460	2222	1.285	2855	2.499	0.17284	16.158	0.3650	2040	7.669	126.3	0.82	0.01
COMBUSTOR	0	41	34 21														
63.619	17.734	1975	492.3(668)	1.3385	21.429	2477											
63.619	4.875	1413	291.0(466)	1.3626	21.429	2113	1.502	3173	2.488	0.17753	16.158	0.3553	2037	8.755	126.1	0.82	0.00
COMBUSTOR	0	42	35 21														
66.083	17.341	1949	484.9(658)	1.3394	21.425	2461											
66.083	5.799	1468	312.3(486)	1.3594	21.425	2152	1.365	2939	2.486	0.16828	16.158	0.3749	2033	7.685	125.8	0.82	0.00
COMBUSTOR	0	43	36 21														
66.459	16.170	1945	483.6(657)	1.3396	21.424	2459											
66.459	5.509	1478	316.0(489)	1.3595	21.424	2159	1.341	2896	2.491	0.15644	16.158	0.4032	2032	7.040	125.6	0.82	0.00
COMBUSTOR REGEN	44	37	21														
66.459	16.170	2221	585.6(758)	1.3296	21.424	2618											
66.459	9.853	1946	484.0(657)	1.3598	21.424	2460	0.917	2255	2.540	0.15644	16.158	0.4032	2119	8.481	131.1	0.82	0.00
NOZZLE AE	45	38	4														
88.695	16.170	1945	483.6(686)	1.3396	21.424	2489											
88.695	0.345	685	48.3(221)	1.3961	21.424	1490	3.133	4667	2.491	0.03256	16.158	1.0373	2515	2.362	155.6	0.82	0.00
NOZZLE PO	46	39	4														
88.695	16.170	1945	483.6(656)	1.3396	21.424	2459											
88.695	0.155	545	2.8(176)	1.4000	21.424	1331	3.685	4905	2.491	0.01929	16.158	3.2698	2593	1.471	160.5	0.82	0.00
NOZZLE AE REGEN	47	40	5														
88.695	16.170	2221	585.6(758)	1.3296	21.424	2618											
88.695	0.390	824	93.8(267)	1.3910	21.424	1631	3.042	4961	2.540	0.03257	16.158	1.0371	2685	2.511	166.2	0.82	0.00
NOZZLE PO REGEN	48	41	5														
88.695	16.170	2221	585.6(758)	1.3296	21.424	2618											
88.695	0.155	634	31.6(205)	1.3977	21.424	1434	3.672	5265	2.540	0.01781	16.158	3.5418	2784	1.457	172.3	0.82	0.00
FICTIVE COMBUSTR	66	59	0														
66.459	97.791	5054	483.6(1815)	1.1651	24.466	3459											
66.459	0.155	1413	-1089.9(425)	1.3269	24.907	1935	4.584	8873	2.553	0.01565	16.158	4.0298	4616	2.159	285.7	0.82	1.00
FICTIVE NOZZLE	67	60	0														
88.695	18.182	1885	461.7(635)	1.3418	21.424	2423											
88.695	0.314	623	28.1(201)	1.3960	21.424	1422	3.276	4658	2.469	0.03257	16.158	1.0371	2495	2.357	154.4	0.82	0.00

XARS	P-IR	P-OB	PPA	OOX	C-IR	C-OB	CA+ALL	P-TH/PSO	P-IR/PTO	P-OB/PSO	P-OP/PTO
6.981E-01	6.350E-01	0.000	-2.758E-01	0.000	0.000	0.000	2.470E-02	4.105E 00	6.376E-04	0.000	0.000
1.636E 01	6.350E-01	0.000	-2.115E 01	0.000	0.000	0.000	1.650E 02	4.105E 00	6.376E-04	0.000	0.000
3.070E 01	2.595E 00	0.000	-1.521E 02	0.000	0.000	0.000	5.053E 02	1.677E 01	2.605E-03	0.000	0.000
3.508E 01	3.785E 00	0.000	-3.508E 02	0.000	0.000	0.000	6.904E 02	2.447E 01	3.800E-03	0.000	0.000
3.555E 01	4.150E 00	0.000	-3.950E 02	0.000	0.000	0.000	7.013E 02	2.683E 01	4.167E-03	0.000	0.000
3.606E 01	4.180E 00	0.000	-4.373E 02	-4.199E 02	-4.199E 02	0.000	7.246E 02	2.702E 01	4.197E-03	0.000	0.000
3.648E 01	4.331E 00	0.000	-4.737E 02	-4.301E 02	-4.301E 02	0.000	7.443E 02	2.800E 01	4.349E-03	0.000	0.000
3.660E 01	4.419E 00	3.149E 00	-5.170E 02	-4.330E 02	-4.330E 02	0.000	7.698E 02	2.857E 01	4.437E-03	2.035E 01	3.162E-03
3.660E 01	4.424E 00	3.180E 00	-5.173E 02	-4.331E 02	-4.331E 02	0.000	7.501E 02	2.859E 01	4.442E-03	2.055E 01	3.193E-03
3.701E 01	4.730E 00	5.270E 00	-5.363E 02	-4.435E 02	-4.435E 02	0.000	7.923E 02	3.057E 01	4.749E-03	3.407E 01	5.291E-03
3.727E 01	5.721E 00	6.600E 00	-5.483E 02	-4.503E 02	-4.503E 02	0.000	8.195E 02	3.698E 01	5.740E-03	4.266E 01	6.627E-03
3.803E 01	8.635E 00	1.156E 01	-5.927E 02	-4.714E 02	-4.714E 02	0.000	9.013E 02	5.582E 01	8.670E-03	7.469E 01	1.160E-02
3.873E 01	1.246E 01	1.611E 01	-6.401E 02	-5.670E 02	-4.976E 02	-6.940E 01	9.793E 02	8.055E 01	1.251E-02	1.041E 02	1.617E-02
3.875E 01	1.258E 01	1.614E 01	-6.412E 02	-5.693E 02	-4.985E 02	-7.075E 01	9.817E 02	8.129E 01	1.263E-02	1.044E 02	1.621E-02
3.901E 01	1.400E 01	1.662E 01	-6.544E 02	-5.990E 02	-5.115E 02	-8.702E 01	1.011E 03	9.049E 01	1.406E-02	1.074E 02	1.669E-02
3.950E 01	1.925E 01	1.752E 01	-6.733E 02	-6.602E 02	-5.415E 02	-1.187E 02	1.067E 03	9.856E 01	1.531E-02	1.132E 02	1.759E-02
3.975E 01	1.871E 01	1.797E 01	-6.803E 02	-6.942E 02	-5.596E 02	-1.346E 02	1.096E 03	1.209E 02	1.879E-02	1.162E 02	1.805E-02
4.000E 01	2.220E 01	2.130E 01	-6.867E 02	-7.306E 02	-5.800E 02	-1.506E 02	1.125E 03	1.435E 02	2.229E-02	1.382E 02	2.147E-02
4.022E 01	2.270E 01	2.435E 01	-6.903E 02	-7.636E 02	-5.992E 02	-1.645E 02	1.150E 03	1.467E 02	2.279E-02	1.574E 02	2.445E-02
4.040E 01	2.311E 01	2.446E 01	-6.910E 02	-7.915E 02	-6.155E 02	-1.760E 02	1.172E 03	1.494E 02	2.320E-02	1.581E 02	2.456E-02
4.041E 01	2.313E 01	2.446E 01	-6.908E 02	-7.930E 02	-6.164E 02	-1.766E 02	1.173E 03	1.495E 02	2.322E-02	1.581E 02	2.456E-02
4.073E 01	2.385E 01	2.466E 01	-6.906E 02	-8.431E 02	-6.463E 02	-1.968E 02	1.210E 03	1.542E 02	2.390E-02	1.594E 02	2.476E-02
4.122E 01	2.495E 01	1.987E 00	-7.191E 02	-9.227E 02	-6.954E 02	-2.273E 02	1.268E 03	1.613E 02	2.505E-02	1.285E 01	1.995E-03
4.150E 01	2.559E 01	2.048E 00	-7.528E 02	-9.698E 02	-7.253E 02	-2.445E 02	1.301E 03	1.654E 02	2.569E-02	1.324E 01	2.057E-03
4.246E 01	4.470E 01	2.256E 00	-8.969E 02	-1.145E 03	-8.289E 02	-3.161E 02	1.415E 03	2.889E 02	4.488E-02	1.458E 01	2.265E-03
4.270E 01	4.467E 01	2.309E 00	-9.391E 02	-1.192E 03	-8.540E 02	-3.383E 02	1.444E 03	2.886E 02	4.485E-02	1.492E 01	2.318E-03
4.271E 01	4.467E 01	2.311E 00	-9.408E 02	-1.194E 03	-8.590E 02	-3.392E 02	1.445E 03	2.887E 02	4.485E-02	1.494E 01	2.320E-03
4.278E 01	4.466E 01	2.325E 00	-9.516E 02	-1.207E 03	-8.614E 02	-3.453E 02	1.453E 03	2.887E 02	4.484E-02	1.503E 01	2.334E-03
4.430E 01	4.448E 01	1.766E 01	-1.133E 03	-1.477E 03	-9.782E 02	-4.991E 02	1.636E 03	2.875E 02	4.466E-02	1.142E 02	1.773E-02
4.431E 01	4.448E 01	1.776E 01	-1.133E 03	-1.479E 03	-9.787E 02	-5.002E 02	1.638E 03	2.875E 02	4.466E-02	1.148E 02	1.783E-02
4.480E 01	4.442E 01	2.270E 01	-1.175E 03	-1.556E 03	-1.003E 03	-5.533E 02	1.697E 03	2.872E 02	4.460E-02	1.467E 02	2.279E-02
4.590E 01	3.672E 01	2.975E 01	-1.209E 03	-1.663E 03	-1.033E 03	-6.292E 02	1.782E 03	2.374E 02	3.687E-02	1.923E 02	2.987E-02
4.620E 01	2.895E 01	2.698E 01	-1.200E 03	-1.771E 03	-1.063E 03	-7.076E 02	1.869E 03	1.871E 02	2.907E-02	1.744E 02	2.709E-02
4.621E 01	2.884E 01	2.695E 01	-1.199E 03	-1.772E 03	-1.064E 03	-7.087E 02	1.870E 03	1.864E 02	2.896E-02	1.742E 02	2.705E-02
4.626E 01	2.833E 01	2.676E 01	-1.198E 03	-1.780E 03	-1.066E 03	-7.100E 02	1.876E 03	1.832E 02	2.845E-02	1.730E 02	2.687E-02
4.731E 01	1.676E 01	2.265E 01	-1.142E 03	-1.945E 03	-1.109E 03	-8.361E 02	2.005E 03	1.084E 02	1.683E-02	1.464E 02	2.274E-02
4.811E 01	1.722E 01	1.951E 01	-1.065E 03	-2.073E 03	-1.142E 03	-9.312E 02	2.104E 03	1.113E 02	1.729E-02	1.261E 02	1.959E-02
5.019E 01	1.135E 01	1.135E 01	-9.254E 02	-2.351E 03	-1.223E 03	-1.128E 03	2.364E 03	7.339E 01	1.140E-02	7.339E 01	1.140E-02
5.072E 01	9.275E 00	9.275E 00	-8.969E 02	-2.403E 03	-1.243E 03	-1.160E 03	2.430E 03	5.995E 01	9.312E-03	5.995E 01	9.312E-03
5.213E 01	8.300E 00	8.300E 00	-8.319E 02	-2.527E 03	-1.295E 03	-1.231E 03	2.608E 03	5.365E 01	8.333E-03	5.365E 01	8.333E-03
5.423E 01	5.350E 00	5.350E 00	-7.567E 02	-2.691E 03	-1.370E 03	-1.322E 03	2.874E 03	3.458E 01	5.371E-03	3.458E 01	5.371E-03
5.473E 01	3.862E 00	3.862E 00	-7.448E 02	-2.727E 03	-1.387E 03	-1.340E 03	2.938E 03	2.497E 01	3.878E-03	2.497E 01	3.878E-03
5.548E 01	3.869E 00	3.869E 00	-7.298E 02	-2.778E 03	-1.412E 03	-1.367E 03	3.034E 03	2.501E 01	3.884E-03	2.501E 01	3.884E-03
5.576E 01	3.871E 00	3.871E 00	-7.242E 02	-2.797E 03	-1.421E 03	-1.376E 03	3.070E 03	2.502E 01	3.887E-03	2.502E 01	3.887E-03
5.624E 01	2.462E 00	3.875E 00	-6.757E 02	-2.825E 03	-1.434E 03	-1.390E 03	3.102E 03	1.592E 01	2.472E-03	2.505E 01	3.891E-03
5.766E 01	2.769E 00	2.769E 00	-6.521E 02	-2.893E 03	-1.467E 03	-1.426E 03	3.209E 03	1.790E 01	2.780E-03	1.790E 01	2.780E-03
5.772E 01	3.825E 00	2.726E 00	-6.513E 02	-2.895E 03	-1.469E 03	-1.427E 03	3.217E 03	2.472E 01	3.840E-03	1.762E 01	2.737E-03
5.786E 01	3.825E 00	2.617E 00	-6.495E 02	-2.901E 03	-1.472E 03	-1.430E 03	3.234E 03	2.472E 01	3.840E-03	1.692E 01	2.628E-03
5.794E 01	2.555E 00	2.555E 00	-6.485E 02	-2.905E 03	-1.474E 03	-1.431E 03	3.245E 03	1.652E 01	2.565E-03	1.652E 01	2.565E-03
5.844E 01	2.162E 00	2.162E 00	-6.431E 02	-2.924E 03	-1.484E 03	-1.440E 03	3.309E 03	1.398E 01	2.171E-03	1.398E 01	2.171E-03
5.917E 01	1.600E 00	1.600E 00	-6.380E 02	-2.950E 03	-1.499E 03	-1.450E 03	3.402E 03	1.034E 01	1.606E-03	1.034E 01	1.606E-03
6.019E 01	3.800E 00	3.800E 00	-6.318E 02	-2.987E 03	-1.519E 03	-1.468E 03	3.532E 03	2.456E 01	3.815E-03	2.456E 01	3.815E-03
6.220E 01	6.487E 00	6.487E 00	-6.306E 02	-3.071E 03	-1.555E 03	-1.516E 03	3.790E 03	4.193E 01	6.514E-03	4.193E 01	6.514E-03
6.362E 01	4.875E 00	4.875E 00	-6.306E 02	-3.133E 03	-1.582E 03	-1.552E 03	3.972E 03	3.151E 01	4.895E-03	3.151E 01	4.895E-03
6.608E 01	5.799E 00	5.799E 00	-6.306E 02	-3.253E 03	-1.630E 03	-1.619E 03	4.289E 03	3.748E 01	5.822E-03	3.748E 01	5.822E-03
6.646E 01	5.250E 00	5.940E 00	-6.306E 02	-3.273E 03	-1.643E 03	-1.630E 03	4.337E 03	3.594E 01	5.271E-03	3.840E 01	5.964E-03

YARS	P-IA	P-OH	PPA	COX	C-IP	TACB	CA-ALI	D-TI/PEL	P-IA/PTA	P-OI/PHO	P-OH/PTA
6.650E 01	5.250E 00	5.955E 00	-6.306E 02	-3.275E 03	-1.643E 03	-1.681E 03	7.542E 03	3.394E 01	5.271E-03	1.449E 01	5.979E-03
6.670E 01	5.037E 00	6.03[illegible]E 00	-6.306E 02	-3.285E 03	-1.648E 03	-1.637E 03	9.369E 03	5.256E 01	5.057E-03	5.878E 01	6.050E-03
6.836E 01	3.265E 00	3.21[illegible]E 00	-5.812E 02	-3.362E 03	-1.682E 03	-1.682E 03	4.548E 03	2.110E 01	3.278E-03	2.075E 01	3.223E-03
6.980E 01	1.965E 00	2.190E 00	-4.535E 02	-3.417E 03	-1.708E 03	-1.713E 03	4.761E 03	1.270E 01	1.973E-03	1.416E 01	2.199E-03
7.052E 01	1.610E 00	1.680E 00	-4.059E 02	-3.443E 03	-1.713E 03	-1.730E 03	4.849E 03	1.041E 01	1.617E-03	1.096E 01	1.687E-03
7.113E 01	1.310E 00	1.559E 00	-3.719E 02	-3.464E 03	-1.720E 03	-1.704E 03	4.723E 03	8.468E 00	1.315E-03	1.008E 01	1.565E-03
7.251E 01	8.100E-01	1.284E 00	-3.150E 02	-3.505E 03	-1.735E 03	-1.770E 03	5.089E 03	5.236E 00	8.133E-04	8.301E 00	1.289E-03
7.404E 01	9.284E-01	9.800E-01	-2.478E 02	-3.540E 03	-1.748E 03	-1.791E 03	5.273E 03	6.001E 00	9.321E-04	6.335E 00	9.839E-04
7.419E 01	9.400E-01	8.850E-01	-2.637E 02	-3.543E 03	-1.749E 03	-1.793E 03	5.291E 03	6.076E 00	9.438E-04	5.721E 00	8.885E-04
7.494E 01	8.499E-01	4.100E-01	-2.386E 02	-3.558E 03	-1.755E 03	-1.803E 03	5.375E 03	5.493E 00	8.533E-04	2.650E 00	4.116E-04
7.494E 01	8.494E-01	4.075E-01	-2.377E 02	-3.558E 03	-1.755E 03	-1.803E 03	5.375E 03	5.490E 00	8.528E-04	2.634E 00	4.091E-04
7.627E 01	6.900E-01	0.000	-2.215E 02	-3.587E 03	-1.762E 03	-1.825E 03	5.427E 03	4.460E 00	6.928E-04	0.000	0.000
7.912E 01	4.700E-01	0.000	-1.983E 02	-3.599E 03	-1.774E 03	-1.825E 03	5.525E 03	3.038E 00	4.719E-04	0.000	0.000
8.302E 01	6.150E-01	0.000	-1.751E 02	-3.608E 03	-1.783E 03	-1.825E 03	5.630E 03	3.975E 00	6.175E-04	0.000	0.000
8.583E 01	4.900E-01	0.000	-1.628E 02	-3.615E 03	-1.790E 03	-1.825E 03	5.685E 03	3.167E 00	4.920E-04	0.000	0.000
8.869E 01	5.450E-01	0.000	-1.503E 02	-3.626E 03	-1.801E 03	-1.825E 03	5.707E 03	3.523E 00	5.472E-04	0.000	0.000
8.869E 01	5.451E-01	0.000	-1.503E 02	-3.626E 03	-1.801E 03	-1.825E 03	5.707E 03	3.524E 00	5.473E-04	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	1.267E 02	1.267E 02	2.921E-03	5.015E-02
4.041E 01	1.491E-01	1.268E 02	3.364E-03	4.578E-02
4.073E 01	4.841E 00	1.317E 02	3.031E-03	5.178E-02
4.122E 01	7.403E 00	1.391E 02	3.011E-03	3.614E-02
4.150E 01	4.400E 00	1.435E 02	3.046E-03	3.609E-02
4.206E 01	1.333E 01	1.568E 02	3.210E-03	4.425E-02
4.270E 01	3.268E 00	1.601E 02	4.036E-03	3.429E-02
4.271E 01	1.331E-01	1.602E 02	3.433E-03	4.228E-02
4.278E 01	7.857E-01	1.610E 02	3.320E-03	4.377E-02
4.430E 01	1.567E 01	1.767E 02	3.749E-03	3.756E-02
4.431E 01	8.270E-02	1.767E 02	3.509E-03	4.020E-02
4.480E 01	3.703E 00	1.805E 02	3.614E-03	3.863E-02
4.550E 01	4.836E 00	1.853E 02	3.647E-03	3.702E-02
4.620E 01	5.196E 00	1.905E 02	3.817E-03	3.416E-02
4.621E 01	7.702E-02	1.906E 02	3.637E-03	3.650E-02
4.626E 01	3.492E-01	1.909E 02	3.605E-03	3.681E-02
4.731E 01	8.505E 00	1.994E 02	3.515E-03	3.347E-02
4.811E 01	6.650E 00	2.061E 02	3.447E-03	3.239E-02
5.019E 01	1.745E 01	2.235E 02	4.094E-03	1.676E-02
5.072E 01	4.197E 00	2.277E 02	3.930E-03	2.085E-02
5.213E 01	9.222E 00	2.369E 02	3.203E-03	2.001E-02
5.423E 01	1.173E 01	2.487E 02	3.127E-03	1.496E-02
5.473E 01	2.647E 00	2.513E 02	3.117E-03	1.214E-02
5.548E 01	3.857E 00	2.552E 02	3.081E-03	1.205E-02
5.576E 01	1.377E 00	2.565E 02	3.069E-03	1.202E-02
5.624E 01	1.088E 00	2.576E 02	2.984E-03	9.982E-03
5.766E 01	3.158E 00	2.608E 02	3.084E-03	8.690E-03
5.772E 01	1.967E-01	2.610E 02	2.958E-03	1.002E-02
5.786E 01	4.759E-01	2.615E 02	2.940E-03	9.955E-03
5.794E 01	2.811E-01	2.617E 02	2.973E-03	8.510E-03
5.844E 01	1.837E 00	2.636E 02	2.960E-03	7.629E-03
5.917E 01	2.691E 00	2.663E 02	3.002E-03	6.151E-03
6.019E 01	3.549E 00	2.698E 02	2.878E-03	1.099E-02
6.220E 01	6.329E 00	2.761E 02	3.134E-03	1.357E-02
6.362E 01	4.501E 00	2.806E 02	2.883E-03	1.274E-02
6.608E 01	7.498E 00	2.881E 02	2.888E-03	1.388E-02
6.646E 01	1.032E 00	2.892E 02	2.922E-03	1.333E-02
6.650E 01	1.035E-01	2.893E 02	2.869E-03	1.316E-02
6.670E 01	5.069E-01	2.898E 02	2.885E-03	1.310E-02
6.836E 01	4.056E 00	2.938E 02	2.750E-03	9.837E-03
6.980E 01	2.911E 00	2.968E 02	2.653E-03	7.479E-03
7.052E 01	1.255E 00	2.980E 02	2.604E-03	6.423E-03
7.113E 01	9.669E-01	2.990E 02	2.576E-03	5.864E-03
7.251E 01	1.937E 00	3.009E 02	2.516E-03	4.740E-03
7.404E 01	1.919E 00	3.028E 02	2.498E-03	4.444E-03
7.419E 01	1.727E-01	3.030E 02	2.489E-03	4.309E-03
7.494E 01	7.541E-01	3.038E 02	2.423E-03	3.334E-03
7.494E 01	1.290E-03	3.038E 02	2.422E-03	3.328E-03
7.527E 01	4.242E-01	3.042E 02	2.433E-03	3.541E-03
7.912E 01	7.363E-01	3.049E 02	2.358E-03	2.695E-03
8.302E 01	7.544E-01	3.057E 02	2.388E-03	3.229E-03
8.543E 01	3.948E-01	3.061E 02	2.339E-03	2.740E-03
8.869E 01	1.972E-01	3.062E 02	2.344E-03	2.936E-03
8.869E 01	0.000	3.062E 02	2.344E-03	2.936E-03

ORIGINAL PAGE IS
OF POOR QUALITY

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-447.	(LBF)
MEASURED THRUST	385.	(LBF)
CALCULATED SPECIFIC IMPULSE	-1051.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	905.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.3051	
MEASURED THRUST COEFFICIENT	0.2627	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	2664.	(LBF)
NET THRUST	-278.	(LBF)
SPECIFIC IMPULSE	-655.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.1900	

MOMENTUM AND FORCES

INLET FRICTION DRAG	126.7	(LBF)
INLET MOMENTUM CHANGE	-617.7	(LBF)
COMBUSTOR FRICTION DRAG	162.5	(LBF)
COMBUSTOR STRUT DRAG	-9.61	(LBF)
COMBUSTOR MOMENTUM CHANGE	-92.	(LBF)
NOZZLE FRICTION DRAG	17.05	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	463.	(LBF)
NOZZLE PRESSURE INTEGRAL	480.	(LBF)
EXTERNAL FRICTION DRAG	34.73	(LBF)
EXTERNAL PRESSURE INTEGRAL	-651.	(LBF)
TOTAL EXTERNAL DRAG	-688.	(LBF)
TOTAL STRUT DRAG	-9.61	(LBF)
CAVITY FORCE	-733.	(LBF)
CALCULATED LOAD CELL FORCE	-1867.	(LBF)
MEASURED LOAD CELL FORCE	-1035.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0. 0.0. 0.0.	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7190	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.603	(IN)
NOZZLE SHROUD TRAILING EDGE	74.943	(IN)
NOZZLE PLUG TRAILING EDGE	68.695	(IN)
STRUT LEADING EDGE	57.859	(IN)
STRUT TRAILING EDGE	66.459	(IN)
COMBUSTOR EXIT	66.459	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9906	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0811	
DELTA PT2	0.1255	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.0982	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.0829	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8765	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9024	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.8529	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8445	
ENTHALPY AT PO - SUPERSONIC	-8.49	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-2.54	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0270
EQUIVALENCE RATIO	0.817
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.1654
COMBUSTOR EFFECTIVENESS	0.1865
INJECTOR DISCHARGE COEFFICIENTS	1.0042, 0.6189, 0.8306,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9922
NOZZLE COEFFICIENT - CT	0.9327
PROCESS EFFICIENCY	1.0526
KINETIC ENERGY EFFICIENCY	0.9830

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	E
1B	42.704	B
1C	44.300	A
2A	50.179	
2C	46.250	
3A	55.469	
3B	57.654	
4	46.204	C

Reading 90

t = 230.52 sec.

READING = 0090 BLOCK = 119 TIME = 230.523 MACH 7.3 PT = 995.249 TT = 2924.5
RAMJET PERFORMANCE

1-27-75
Reg. Corrected

S U M M A R Y   R E P O R T

X	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	H	A/AC	MOMTM	U	IVAC	PHI	ETAC
WIND TUNNEL		1	0 5														
0.000	995.249	2925	646.8(772)	1.2951	28.956	2550											
0.000	0.155	279	-62.0(67)	1.3958	28.955	818	7.278	5955	1.800	0.06173	15.672	0.9912	2940	5.713	187.6		
SPIKE TIP NS		2	0 7														
0.600	11.437	2925	646.8(772)	1.2950	28.955	2550											
0.600	10.550	2871	630.7(757)	1.2968	28.955	2528	0.355	697	2.106	0.06173	15.672	0.9912	3115	0.860	190.8		
WIND TUNNEL		3	0 0														
0.000	995.249	2925	646.8(772)	1.2951	28.956	2550											
0.000	0.171	287	-60.1(69)	1.3961	28.955	830	7.166	5947	1.800	0.06616	16.795	0.9912	3148	6.114	187.4		
SPIKE TIP NS		4	0 0														
0.600	11.437	2925	646.8(772)	1.2950	28.955	2550											
0.600	10.402	2862	627.9(754)	1.2971	28.955	2525	0.385	971	2.106	0.06616	16.795	0.9912	3148	0.999	187.4		
INLET THROAT		5	0 4														
40.400	347.682	2831	618.7(745)	1.2981	28.956	2512											
40.400	10.056	1171	156.4(285)	1.3679	28.955	1658	2.901	4810	1.862	0.77419	15.672	0.0790	2547	57.672	162.5		
INLET UPNRSK		6	0 3														
40.400	347.682	2831	618.7(745)	1.2981	28.956	2512											
40.400	8.677	1125	144.6(274)	1.3708	28.955	1627	2.993	4870	1.862	0.70381	15.672	0.0869	2566	53.268	163.7		
INLET DNNRSK		7	0 4														
40.400	103.402	2831	618.8(745)	1.2981	28.955	2512											
40.400	90.230	2744	592.7(719)	1.3009	28.955	2476	0.461	1142	1.946	0.70381	15.672	0.0869	2566	12.492	163.7		
COMBUSTOR		0 8	1 5														
40.410	217.695	2874	628.4(812)	1.2977	26.963	2623											
40.410	14.311	1476	204.7(392)	1.3506	26.963	1918	2.401	4605	2.018	0.77879	15.767	0.0790	2546	55.732	161.5	0.18	0.16
COMBUSTOR		0 9	2 5														
40.725	162.187	3141	625.8(892)	1.2852	27.266	2713											
40.725	19.158	1901	239.7(512)	1.3279	27.267	2145	2.049	4395	2.060	0.78159	15.767	0.0788	2541	53.390	161.1	0.18	0.43
COMBUSTOR		0 10	3 21														
41.215	221.553	2761	621.6(778)	1.3026	26.864	2580											
41.215	12.409	1350	198.1(357)	1.3587	26.864	1842	2.499	4604	2.006	0.77587	15.767	0.0793	2508	55.508	159.1	0.18	0.06
COMBUSTOR		0 11	4 3														
41.500	204.026	2719	619.1(766)	1.3044	26.828	2564											
41.500	13.819	1394	221.1(370)	1.3565	26.828	1872	2.384	4463	2.008	0.76805	15.767	0.0802	2471	53.270	156.7	0.18	0.03
COMBUSTOR		0 12	5 5														
42.460	99.206	2997	608.8(848)	1.2911	27.164	2661											
42.460	24.707	2165	348.2(591)	1.3192	27.165	2286	1.580	3611	2.084	0.72452	15.767	0.0850	2307	40.661	146.3	0.18	0.34
COMBUSTOR		0 13	6 5														
42.700	93.777	2812	609.3(815)	1.3002	26.200	2634											
42.700	24.940	2050	366.8(575)	1.3262	26.200	2271	1.534	3484	2.122	0.71865	15.808	0.0859	2260	38.906	143.0	0.26	0.15
COMBUSTOR		0 14	7 2														
42.710	93.419	2809	609.2(815)	1.3003	26.198	2633											
42.710	24.950	2050	367.5(575)	1.3262	26.198	2271	1.531	3477	2.122	0.71753	15.808	0.0860	2258	38.777	142.9	0.26	0.15
COMBUSTOR		0 15	8 3														
42.775	92.017	2787	606.3(808)	1.3013	26.177	2625											
42.775	25.013	2041	371.2(573)	1.3267	26.177	2268	1.519	3445	2.121	0.71506	15.808	0.0863	2245	38.280	142.0	0.26	0.13
COMBUSTOR		0 16	9 21														
44.300	65.714	2510	594.2(796)	1.3151	23.484	2644											
44.300	39.631	2220	493.1(696)	1.3250	23.484	2496	0.901	2250	2.295	0.66830	15.958	0.0932	2062	23.367	129.2	0.55	0.05
COMBUSTOR		0 17	10 21														
44.310	67.242	2398	594.1(759)	1.3202	23.384	2594											
44.310	39.727	2107	493.4(659)	1.3303	23.384	2441	0.919	2244	2.280	0.66824	15.958	0.0932	2062	23.301	129.2	0.55	0.01
COMBUSTOR		0 18	11 21														
44.800	65.656	2359	586.3(746)	1.3218	23.369	2576											
44.800	44.423	2143	511.0(671)	1.3292	23.369	2462	0.785	1934	2.276	0.65998	15.958	0.0944	2033	19.836	127.4	0.55	0.00

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAL	PHI	ETAC
COMBUSTOR	0	19	12 21														
45.495	65.481	2325	575.5(734)	1.3229	23.366	2558											
45.495	48.599	2161	518.7(577)	1.3286	23.366	2472	0.682	1687	2.271	0.65554	15.958	0.0950	2020	17.185	126.6	0.55	0.00
COMBUSTOR	0	20	13 21														
46.200	63.281	2299	577.8(773)	1.3254	21.878	2631											
46.200	44.267	2104	506.4(701)	1.3323	21.878	2524	0.749	1890	2.392	0.64278	16.065	0.0976	2050	18.885	127.6	0.76	0.02
COMBUSTOR	0	21	14 21														
46.210	63.802	2257	577.7(751)	1.3262	21.828	2602											
46.210	44.206	2041	506.0(680)	1.3353	21.828	2491	0.760	1894	2.382	0.64164	16.065	0.0978	2052	18.884	127.8	0.76	0.00
COMBUSTOR	0	22	15 21														
46.260	63.943	2226	576.9(747)	1.3287	21.821	2596											
46.260	43.899	2027	504.1(674)	1.3359	21.821	2484	0.768	1909	2.380	0.63974	16.065	0.0980	2055	18.976	127.9	0.76	0.00
COMBUSTOR	0	23	16 4														
47.310	62.714	2274	561.8(763)	1.3260	21.894	2617											
47.310	37.447	2000	461.9(664)	1.3359	21.894	2463	0.908	2236	2.388	0.59301	16.065	0.1058	2131	20.605	132.6	0.76	0.03
COMBUSTOR	0	24	17 4														
48.110	59.550	2445	550.5(823)	1.3178	22.062	2695											
48.110	35.136	2149	441.5(715)	1.3281	22.062	2536	0.921	2356	2.414	0.54509	16.065	0.1151	2202	19.786	137.1	0.76	0.08
COMBUSTOR	0	25	18 5														
50.185	52.180	2859	525.4(970)	1.2978	22.481	2865											
50.185	17.646	2213	283.4(730)	1.3202	22.482	2542	1.369	3480	2.467	0.40363	16.065	0.1554	2440	21.026	151.9	0.76	0.22
COMBUSTOR	0	26	19 4														
50.715	53.390	2799	520.2(948)	1.3004	22.439	2840											
50.715	14.012	2033	236.0(666)	1.3275	22.439	2445	1.542	3771	2.459	0.37748	16.065	0.1662	2479	22.123	154.3	0.76	0.21
COMBUSTOR	0	27	20 6														
52.125	79.218	2361	508.2(792)	1.3203	22.087	2649											
52.125	6.175	1227	108.1(392)	1.3669	22.087	1945	2.301	4474	2.374	0.32172	16.065	0.1950	2543	22.370	158.3	0.76	0.09
COMBUSTOR	0	28	21 6														
54.225	43.007	2939	491.6(1000)	1.2929	22.559	2894											
54.225	8.850	2022	149.3(661)	1.3254	22.560	2430	1.703	4139	2.494	0.26441	16.109	0.2379	2611	17.006	162.1	0.77	0.27
COMBUSTOR	0	29	22 6														
54.725	64.294	2505	488.5(845)	1.3130	22.182	2715											
54.725	5.062	1319	65.0(422)	1.3624	22.182	2007	2.294	4603	2.415	0.25360	16.109	0.2480	2627	18.143	163.0	0.77	0.18
COMBUSTOR	0	30	23 5														
55.475	50.001	2709	484.2(917)	1.3035	22.370	2801											
55.475	5.913	1605	82.5(517)	1.3455	22.370	2191	2.046	4483	2.459	0.23906	16.109	0.2631	2643	16.656	164.1	0.77	0.21
COMBUSTOR	0	31	24 4														
55.760	46.185	2799	482.7(946)	1.2996	22.445	2834											
55.760	6.236	1717	89.3(555)	1.3395	22.446	2257	1.965	4436	2.473	0.23400	16.109	0.2688	2651	16.132	164.5	0.77	0.23
COMBUSTOR	0	32	25 4														
56.235	37.104	2962	480.1(1008)	1.2914	22.607	2900											
56.235	5.162	1853	66.7(600)	1.3517	22.608	2329	1.948	4537	2.508	0.18494	16.109	0.3401	2721	13.040	168.9	0.77	0.29
COMBUSTOR	0	33	26 4														
57.660	39.175	2909	473.2(989)	1.2937	22.575	2879											
57.660	4.234	1704	30.0(549)	1.3386	22.575	2241	2.102	4710	2.497	0.17100	16.109	0.3678	2757	12.515	171.1	0.77	0.27
COMBUSTOR	0	34	27 4														
57.715	34.437	3056	473.0(1042)	1.2866	22.711	2934											
57.715	4.880	1930	52.5(626)	1.3272	22.713	2366	1.937	4587	2.521	0.17046	16.109	0.3690	2758	12.151	171.2	0.77	0.32
COMBUSTOR	0	35	28 3														
57.855	34.778	3040	472.4(1036)	1.2873	22.698	2928											
57.855	4.756	1902	48.0(616)	1.3285	22.699	2353	1.959	4608	2.519	0.16926	16.109	0.3716	2760	12.121	171.3	0.77	0.31
COMBUSTOR	0	36	29 11														
57.935	44.441	2805	472.0(950)	1.2967	22.482	2837											
57.935	3.743	1531	9.5(490)	1.3460	22.482	2136	2.252	4811	2.477	0.17116	16.109	0.3675	2761	12.797	171.4	0.77	0.25
COMBUSTOR	0	37	30 5														
58.441	60.430	2601	470.1(878)	1.3060	22.307	2754											
58.441	2.841	1202	-27.6(382)	1.3674	22.307	1914	2.608	4990	2.429	0.17030	16.109	0.3693	2768	13.208	171.8	0.77	0.19

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	G	F/A		A/AC	NOPIM	L	IVAC	PHI	ETAC
COMBUSTOR 0 38 31 7																	
59.165	138.955	2286	467.7(766)	1.3225	22.044	2011											
59.165	1.550	691	-80.6(218)	1.3934	22.044	1474	3.555	5239	2.317	0.16760	16.109	0.3755	2772	13.646	172.1	0.77	0.10
COMBUSTOR 0 39 32 7																	
60.185	29.366	3533	464.6(1143)	1.2719	22.995	3027											
60.185	5.875	2319	74.6(761)	1.3006	23.000	2561	1.724	4416	2.554	0.16653	16.109	0.3777	2760	11.430	172.5	0.77	0.41
COMBUSTOR 0 40 33 5																	
62.195	25.896	3713	458.5(1283)	1.2489	23.392	3139											
62.195	6.350	2929	140.2(981)	1.2813	23.410	2823	1.414	3991	2.587	0.17233	16.109	0.3650	2779	10.688	172.5	0.77	0.53
COMBUSTOR 0 41 34 5																	
63.615	31.680	3286	454.5(1125)	1.2742	22.975	3010											
63.615	6.025	2252	59.0(737)	1.3114	22.979	2528	1.760	4449	2.543	0.17700	16.109	0.3553	2776	12.236	172.3	0.77	0.40
COMBUSTOR 0 42 35 5																	
66.079	24.371	3801	446.6(1315)	1.2423	23.513	3160											
66.079	6.909	3094	154.1(1041)	1.2733	23.536	2885	1.326	3825	2.595	0.16777	16.109	0.3749	2771	9.974	172.0	0.77	0.97
COMBUSTOR 0 43 36 4																	
66.455	22.166	3887	445.2(1347)	1.2355	23.608	3180											
66.455	9.030	3250	175.9(1099)	1.2653	23.038	2941	1.248	3670	2.607	0.15597	16.109	0.4032	2770	8.896	172.0	0.77	0.60
COMBUSTOR REGEN 44 37 7																	
66.455	22.166	4228	609.9(1484)	1.2133	23.555	3291											
66.455	12.101	3792	405.4(1310)	1.2371	23.610	3143	1.018	3199	2.648	0.15597	16.109	0.4032	2852	7.754	177.0	0.77	0.60
NOZZLE AE 45 38 5																	
88.691	22.166	3887	445.2(1319)	1.2355	23.608	3180											
88.691	0.567	1725	-388.9(541)	1.3254	23.644	2193	2.946	6460	2.607	0.03247	16.109	1.9371	3516	3.260	218.2	0.77	0.60
NOZZLE PO 46 39 5																	
88.691	22.166	3887	445.2(1319)	1.2355	23.608	3180											
88.691	0.155	1242	-549.7(380)	1.3522	23.644	1879	3.755	7056	2.607	0.01344	16.109	4.6805	3718	1.473	230.8	0.77	0.60
NOZZLE AE REGEN 47 40 5																	
88.691	22.166	4228	609.9(1484)	1.2133	23.555	3291											
88.691	0.625	1986	-298.4(631)	1.3137	23.644	2342	2.878	6742	2.648	0.03247	16.109	1.9371	3666	3.402	228.8	0.77	0.60
NOZZLE PO REGEN 48 41 5																	
88.691	22.166	4228	609.9(1484)	1.2133	23.555	3291											
88.691	0.155	1406	-496.0(434)	1.3425	23.644	1992	3.734	7439	2.648	0.01251	16.109	5.0278	3924	1.446	243.6	0.77	0.60
FICTIVE COMBUSTR 66 59 0																	
66.455	347.682	5014	445.2(1773)	1.1869	24.676	3449											
66.455	0.155	952	-1159.0(277)	1.3573	25.106	1599	5.601	6959	2.412	0.02364	16.109	2.6610	4591	3.291	285.0	0.77	1.00
FICTIVE NOZZLE 67 60 0																	
88.691	17.373	3841	425.8(1329)	1.2366	23.609	3163											
88.691	0.634	1854	-344.3(566)	1.3195	23.644	2268	2.737	6208	2.623	0.03247	16.109	1.9371	3423	3.132	212.5	0.77	0.60

READING = 0090   BLOCK = 139   TIME = 250.523   MACH 7.5   PI = 995.249   TT = 2924.5

XABS	P-IB	P-OB	QPA	QUX	Q-IB	Q-OB	CAWALL	P-IB/PBU	P-IB/PTO	P-OB/PBU	P-OB/PTO
6.981E-01	6.150E-01	0.000	-2.701E-01	0.000	0.000	0.000	2.470E-02	3.979E 00	6.179E-04	0.000	0.000
1.836E 01	6.150E-01	0.000	-2.050E 01	0.000	0.000	0.000	1.634E 02	3.979E 00	6.179E-04	0.000	0.000
3.070E 01	1.100E 00	0.000	-9.662E 01	0.000	0.000	0.000	5.053E 02	7.117E 00	1.105E-03	0.000	0.000
3.506E 01	1.987E 00	0.000	-1.900E 02	0.000	0.000	0.000	6.604E 02	1.286E 01	1.996E-03	0.000	0.000
3.555E 01	2.185E 00	0.000	-2.091E 02	0.000	0.000	0.000	7.013E 02	1.414E 01	2.195E-03	0.000	0.000
3.606E 01	2.020E 00	0.000	-2.304E 02	-1.759E 02	-1.759E 02	0.000	7.246E 02	1.307E 01	2.030E-03	0.000	0.000
3.648E 01	2.306E 00	0.000	-2.489E 02	-1.801E 02	-1.801E 02	0.000	7.443E 02	1.493E 01	2.319E-03	0.000	0.000
3.659E 01	2.329E 00	3.160E 00	-2.870E 02	-1.813E 02	-1.813E 02	0.000	7.496E 02	1.507E 01	2.340E-03	2.044E 01	3.175E-03
3.660E 01	2.330E 00	3.179E 00	-2.871E 02	-1.814E 02	-1.814E 02	0.000	7.499E 02	1.507E 01	2.341E-03	2.057E 01	3.194E-03
3.701E 01	2.405E 00	4.480E 00	-2.892E 02	-1.858E 02	-1.858E 02	0.000	7.925E 02	1.556E 01	2.416E-03	2.899E 01	4.502E-03
3.726E 01	2.324E 00	5.287E 00	-2.884E 02	-1.886E 02	-1.886E 02	0.000	8.193E 02	1.503E 01	2.335E-03	3.421E 01	5.313E-03
3.803E 01	2.080E 00	8.831E 00	-2.694E 02	-1.976E 02	-1.976E 02	0.000	9.017E 02	1.346E 01	2.090E-03	5.714E 01	8.873E-03
3.872E 01	6.463E 00	1.205E 01	-2.648E 02	-2.623E 02	-2.128E 02	-4.952E 01	9.791E 02	4.181E 01	6.493E-03	7.796E 01	1.211E-02
3.875E 01	6.620E 00	1.198E 01	-2.649E 02	-2.642E 02	-2.136E 02	-5.067E 01	9.819E 02	4.283E 01	6.652E-03	7.750E 01	1.204E-02
3.901E 01	8.260E 00	1.124E 01	-2.665E 02	-2.856E 02	-2.230E 02	-6.256E 01	1.011E 03	5.344E 01	8.299E-03	7.270E 01	1.129E-02
3.950E 01	1.157E 01	9.837E 00	-2.842E 02	-3.321E 02	-2.472E 02	-8.489E 01	1.067E 03	7.488E 01	1.163E-02	6.365E 01	9.884E-03
3.974E 01	1.133E 01	9.137E 00	-2.928E 02	-3.566E 02	-2.626E 02	-9.602E 01	1.096E 03	7.331E 01	1.138E-02	5.912E 01	9.181E-03
4.000E 01	1.108E 01	9.314E 00	-2.984E 02	-3.866E 02	-2.813E 02	-1.076E 02	1.125E 03	7.168E 01	1.113E-02	6.026E 01	9.358E-03
4.021E 01	1.316E 01	9.462E 00	-3.042E 02	-4.158E 02	-2.985E 02	-1.173E 02	1.150E 03	8.513E 01	1.322E-02	6.122E 01	9.508E-03
4.040E 01	1.495E 01	1.337E 01	-3.083E 02	-4.394E 02	-3.138E 02	-1.256E 02	1.172E 03	9.671E 01	1.502E-02	8.649E 01	1.343E-02
4.041E 01	1.504E 01	1.358E 01	-3.084E 02	-4.407E 02	-3.146E 02	-1.261E 02	1.173E 03	9.734E 01	1.512E-02	8.785E 01	1.364E-02
4.072E 01	1.809E 01	2.022E 01	-3.089E 02	-4.819E 02	-3.416E 02	-1.402E 02	1.210E 03	1.170E 02	1.818E-02	1.309E 02	2.032E-02
4.121E 01	2.283E 01	1.987E 00	-3.331E 02	-5.401E 02	-3.862E 02	-1.619E 02	1.267E 03	1.477E 02	2.294E-02	1.286E 01	1.997E-03
4.150E 01	2.559E 01	2.051E 00	-3.657E 02	-5.879E 02	-4.137E 02	-1.743E 02	1.301E 03	1.656E 02	2.571E-02	1.327E 01	2.061E-03
4.246E 01	4.715E 01	2.264E 00	-5.152E 02	-7.504E 02	-5.119E 02	-2.385E 02	1.415E 03	3.051E 02	4.738E-02	1.465E 01	2.275E-03
4.270E 01	4.756E 01	2.318E 00	-5.592E 02	-7.990E 02	-5.373E 02	-2.617E 02	1.444E 03	3.077E 02	4.779E-02	1.500E 01	2.329E-03
4.271E 01	4.758E 01	2.320E 00	-5.610E 02	-8.011E 02	-5.384E 02	-2.627E 02	1.445E 03	3.078E 02	4.781E-02	1.501E 01	2.331E-03
4.277E 01	4.769E 01	2.334E 00	-5.729E 02	-8.148E 02	-5.452E 02	-2.695E 02	1.453E 03	3.086E 02	4.792E-02	1.510E 01	2.346E-03
4.430E 01	5.031E 01	2.895E 01	-7.377E 02	-1.167E 03	-7.038E 02	-4.636E 02	1.637E 03	3.255E 02	5.056E-02	1.873E 02	2.908E-02
4.431E 01	5.033E 01	2.912E 01	-7.383E 02	-1.170E 03	-7.049E 02	-4.651E 02	1.638E 03	3.257E 02	5.057E-02	1.884E 02	2.926E-02
4.480E 01	5.117E 01	3.767E 01	-7.623E 02	-1.293E 03	-7.548E 02	-5.379E 02	1.697E 03	3.311E 02	5.142E-02	2.437E 02	3.785E-02
4.549E 01	4.740E 01	4.980E 01	-7.709E 02	-1.465E 03	-8.239E 02	-6.415E 02	1.782E 03	3.067E 02	4.762E-02	3.222E 02	5.004E-02
4.620E 01	4.357E 01	4.497E 01	-7.351E 02	-1.636E 03	-8.909E 02	-7.453E 02	1.869E 03	2.819E 02	4.378E-02	2.909E 02	4.518E-02
4.621E 01	4.351E 01	4.490E 01	-7.329E 02	-1.639E 03	-8.918E 02	-7.467E 02	1.870E 03	2.815E 02	4.372E-02	2.905E 02	4.511E-02
4.626E 01	4.324E 01	4.455E 01	-7.295E 02	-1.650E 03	-8.964E 02	-7.540E 02	1.876E 03	2.798E 02	4.345E-02	2.883E 02	4.477E-02
4.731E 01	3.754E 01	3.736E 01	-6.461E 02	-1.894E 03	-9.906E 02	-9.037E 02	2.005E 03	2.429E 02	3.772E-02	2.417E 02	3.753E-02
4.811E 01	3.840E 01	3.187E 01	-5.691E 02	-2.075E 03	-1.058E 03	-1.016E 03	2.104E 03	2.485E 02	3.858E-02	2.062E 02	3.202E-02
5.018E 01	1.765E 01	1.765E 01	-3.156E 02	-2.479E 03	-1.217E 03	-1.262E 03	2.363E 03	1.142E 02	1.773E-02	1.142E 02	1.773E-02
5.071E 01	1.401E 01	1.401E 01	-2.719E 02	-2.562E 03	-1.254E 03	-1.308E 03	2.430E 03	9.066E 01	1.408E-02	9.066E 01	1.408E-02
5.212E 01	6.175E 00	6.175E 00	-1.973E 02	-2.756E 03	-1.344E 03	-1.412E 03	2.607E 03	3.995E 01	6.204E-03	3.995E 01	6.204E-03
5.422E 01	8.850E 00	8.850E 00	-1.145E 02	-2.995E 03	-1.458E 03	-1.537E 03	2.874E 03	5.726E 01	8.892E-03	5.726E 01	8.892E-03
5.472E 01	5.062E 00	5.062E 00	-9.646E 01	-3.044E 03	-1.481E 03	-1.563E 03	2.937E 03	3.275E 01	5.087E-03	3.275E 01	5.087E-03
5.547E 01	5.913E 00	5.913E 00	-7.523E 01	-3.114E 03	-1.514E 03	-1.600E 03	3.033E 03	3.826E 01	5.941E-03	3.826E 01	5.941E-03
5.576E 01	6.236E 00	6.236E 00	-6.636E 01	-3.139E 03	-1.526E 03	-1.613E 03	3.070E 03	4.035E 01	6.266E-03	4.035E 01	6.266E-03
5.623E 01	3.550E 00	6.775E 00	5.738E 00	-3.180E 03	-1.545E 03	-1.635E 03	3.102E 03	2.297E 01	3.567E-03	4.383E 01	6.807E-03
5.766E 01	4.234E 00	4.234E 00	4.491E 01	-3.291E 03	-1.597E 03	-1.694E 03	3.209E 03	2.739E 01	4.254E-03	2.739E 01	4.254E-03
5.771E 01	5.625E 00	4.136E 00	4.610E 01	-3.295E 03	-1.599E 03	-1.696E 03	3.217E 03	3.639E 01	5.652E-03	2.676E 01	4.155E-03
5.785E 01	5.625E 00	3.886E 00	4.871E 01	-3.305E 03	-1.603E 03	-1.702E 03	3.234E 03	3.639E 01	5.652E-03	2.514E 01	3.905E-03
5.793E 01	3.743E 00	3.743E 00	5.025E 01	-3.310E 03	-1.605E 03	-1.705E 03	3.245E 03	2.422E 01	3.761E-03	2.422E 01	3.761E-03
5.844E 01	2.841E 00	2.841E 00	5.775E 01	-3.341E 03	-1.620E 03	-1.721E 03	3.309E 03	1.838E 01	2.855E-03	1.838E 01	2.855E-03
5.916E 01	1.550E 00	1.550E 00	6.370E 01	-3.379E 03	-1.639E 03	-1.740E 03	3.402E 03	1.003E 01	1.557E-03	1.003E 01	1.557E-03
6.018E 01	5.875E 00	5.875E 00	7.230E 01	-3.430E 03	-1.661E 03	-1.769E 03	3.532E 03	3.801E 01	5.903E-03	3.801E 01	5.903E-03
6.219E 01	8.350E 00	8.350E 00	7.396E 01	-3.529E 03	-1.691E 03	-1.838E 03	3.790E 03	5.403E 01	8.390E-03	5.403E 01	8.390E-03
6.361E 01	6.025E 00	6.025E 00	7.396E 01	-3.593E 03	-1.708E 03	-1.885E 03	3.972E 03	3.898E 01	6.054E-03	3.898E 01	6.054E-03
6.608E 01	8.909E 00	8.909E 00	7.396E 01	-3.721E 03	-1.744E 03	-1.977E 03	4.289E 03	5.764E 01	8.952E-03	5.764E 01	8.952E-03
6.645E 01	8.710E 00	9.349E 00	7.396E 01	-3.743E 03	-1.750E 03	-1.994E 03	4.337E 03	5.635E 01	8.752E-03	6.049E 01	9.394E-03

READING = 0096 BLOCK = 319 TIME = [illegible] ALT 7.3 PI = [illegible] TT = [illegible]

XABS	P-1H	P-0B	PPA	GOX	G-1H	G-1B	ICANALL	P-1B/PS0	P-1H/PT0	P-0B/PS0	P-0B/PT0
6.649E 01	8.710E 00	9.396E 00	7.396E 01	-3.740E 03	-1.750E 03	-1.995E 03	4.542E 03	5.635E 01	8.752E-03	6.079E 01	9.441E-03
6.669E 01	8.404E 00	9.630E 00	7.396E 01	-3.757E 03	-1.753E 03	-2.004E 03	4.568E 03	5.438E 01	8.444E-03	6.231E 01	9.676E-03
6.835E 01	5.865E 00	5.185E 00	1.552E 02	-3.830E 03	-1.777E 03	-2.062E 03	4.584E 03	3.795E 01	5.893E-03	3.355E 01	5.210E-03
6.979E 01	2.965E 00	3.682E 00	3.600E 02	-3.894E 03	-1.792E 03	-2.101E 03	4.761E 03	1.918E 01	2.979E-03	2.382E 01	3.699E-03
7.051E 01	2.215E 00	2.930E 00	4.039E 02	-3.920E 03	-1.798E 03	-2.122E 03	4.849E 03	1.433E 01	2.226E-03	1.896E 01	2.944E-03
7.112E 01	1.580E 00	2.635E 00	4.940E 02	-3.941E 03	-1.803E 03	-2.138E 03	4.923E 03	1.022E 01	1.588E-03	1.705E 01	2.645E-03
7.250E 01	9.100E-01	1.960E 00	5.727E 02	-3.977E 03	-1.810E 03	-2.166E 03	5.004E 03	5.886E 00	9.143E-04	1.268E 01	1.970E-03
7.403E 01	8.053E-01	1.215E 00	6.269E 02	-4.004E 03	-1.816E 03	-2.187E 03	5.273E 03	5.210E 00	8.091E-04	7.861E 00	1.221E-03
7.418E 01	7.950E-01	1.080E 00	6.331E 02	-4.006E 03	-1.817E 03	-2.189E 03	5.291E 03	5.144E 00	7.988E-04	6.988E 00	1.085E-03
7.493E 01	7.607E-01	4.050E-01	6.587E 02	-4.019E 03	-1.819E 03	-2.200E 03	5.375E 03	4.922E 00	7.644E-04	2.620E 00	4.069E-04
7.494E 01	7.606E-01	4.014E-01	6.595E 02	-4.019E 03	-1.819E 03	-2.200E 03	5.375E 03	4.921E 00	7.642E-04	2.597E 00	4.033E-04
7.626E 01	7.000E-01	0.000	6.750E 02	-4.043E 03	-1.822E 03	-2.221E 03	5.427E 03	4.529E 00	7.033E-04	0.000	0.000
7.911E 01	5.600E-01	0.000	7.001E 02	-4.048E 03	-1.827E 03	-2.221E 03	5.525E 03	3.623E 00	5.627E-04	0.000	0.000
8.301E 01	6.450E-01	0.000	7.259E 02	-4.051E 03	-1.830E 03	-2.221E 03	5.630E 03	4.173E 00	6.481E-04	0.000	0.000
8.582E 01	4.900E-01	0.000	7.365E 02	-4.053E 03	-1.832E 03	-2.221E 03	5.689E 03	3.170E 00	4.923E-04	0.000	0.000
8.668E 01	6.650E-01	0.000	7.524E 02	-4.055E 03	-1.834E 03	-2.221E 03	5.707E 03	4.303E 00	6.682E-04	0.000	0.000
8.869E 01	6.654E-01	0.000	7.524E 02	-4.055E 03	-1.834E 03	-2.221E 03	5.707E 03	4.305E 00	6.685E-04	0.000	0.000

ORIGINAL PAGE IS
OF POOR QUALITY

X	CPMAG	CLFAG	LF	HC
4.040E 01	8.561E 01	8.561E 01	2.132E-03	5.306E-02
4.041E 01	1.623E-01	8.578E 01	2.740E-03	4.005E-02
4.072E 01	5.253E 00	9.103E 01	2.463E-03	5.359E-02
4.121E 01	8.182E 00	9.921E 01	2.734E-03	3.699E-02
4.150E 01	4.743E 00	1.040E 02	2.449E-03	4.243E-02
4.246E 01	1.391E 01	1.179E 02	2.742E-03	5.573E-02
4.270E 01	3.344E 00	1.212E 02	3.130E-03	4.995E-02
4.271E 01	1.365E-01	1.213E 02	2.933E-03	5.313E-02
4.277E 01	8.823E-01	1.222E 02	2.945E-03	5.279E-02
4.430E 01	1.840E 01	1.406E 02	3.552E-03	4.983E-02
4.431E 01	9.545E-02	1.407E 02	3.191E-03	5.667E-02
4.480E 01	4.104E 00	1.448E 02	3.201E-03	5.610E-02
4.549E 01	5.067E 00	1.499E 02	3.251E-03	5.432E-02
4.620E 01	5.206E 00	1.551E 02	3.435E-03	5.229E-02
4.621E 01	7.295E-02	1.552E 02	3.213E-03	5.664E-02
4.626E 01	3.736E-01	1.556E 02	3.171E-03	5.746E-02
4.731E 01	7.950E 00	1.635E 02	3.032E-03	5.763E-02
4.811E 01	6.054E 00	1.696E 02	3.016E-03	5.550E-02
5.018E 01	1.551E 01	1.851E 02	2.741E-03	4.198E-02
5.071E 01	4.188E 00	1.893E 02	2.992E-03	3.351E-02
5.212E 01	1.149E 01	2.007E 02	2.827E-03	1.998E-02
5.422E 01	1.384E 01	2.146E 02	2.453E-03	2.678E-02
5.472E 01	2.985E 00	2.176E 02	2.877E-03	1.621E-02
5.547E 01	4.403E 00	2.220E 02	2.476E-03	1.972E-02
5.576E 01	1.541E 00	2.236E 02	2.677E-03	1.926E-02
5.623E 01	1.243E 00	2.248E 02	2.646E-03	1.584E-02
5.766E 01	3.692E 00	2.285E 02	2.721E-03	1.332E-02
5.771E 01	2.360E-01	2.287E 02	2.712E-03	1.470E-02
5.785E 01	5.965E-01	2.293E 02	2.819E-03	1.401E-02
5.793E 01	3.961E-01	2.297E 02	3.393E-03	1.026E-02
5.844E 01	2.484E 00	2.322E 02	2.531E-03	1.046E-02
5.916E 01	2.989E 00	2.352E 02	2.276E-03	7.126E-03
6.018E 01	3.642E 00	2.389E 02	2.168E-03	1.925E-02
6.219E 01	7.420E 00	2.463E 02	3.036E-03	1.840E-02
6.361E 01	6.480E 00	2.526E 02	3.171E-03	1.454E-02
6.608E 01	1.092E 01	2.637E 02	3.048E-03	1.882E-02
6.645E 01	1.456E 00	2.651E 02	3.350E-03	1.665E-02
6.649E 01	1.545E-01	2.653E 02	3.417E-03	1.679E-02
6.669E 01	7.799E-01	2.661E 02	3.416E-03	1.676E-02
6.835E 01	6.458E 00	2.725E 02	3.302E-03	1.315E-02
6.979E 01	4.811E 00	2.773E 02	3.204E-03	9.613E-03
7.051E 01	2.077E 00	2.794E 02	3.158E-03	8.047E-03
7.112E 01	1.576E 00	2.810E 02	3.125E-03	7.053E-03
7.250E 01	3.061E 00	2.840E 02	3.062E-03	5.362E-03
7.403E 01	2.770E 00	2.868E 02	3.001E-03	4.136E-03
7.418E 01	2.281E-01	2.870E 02	2.989E-03	3.912E-03
7.493E 01	9.524E-01	2.880E 02	2.908E-03	2.731E-03
7.494E 01	1.560E-03	2.880E 02	2.908E-03	2.724E-03
7.626E 01	5.291E-01	2.885E 02	2.931E-03	3.129E-03
7.911E 01	9.870E-01	2.895E 02	2.881E-03	2.627E-03
8.301E 01	1.021E 00	2.905E 02	2.885E-03	2.905E-03
8.582E 01	5.070E-01	2.910E 02	2.826E-03	2.343E-03
8.868E 01	2.119E-01	2.912E 02	2.863E-03	2.943E-03
8.869E 01	0.000	2.912E 02	2.863E-03	2.944E-03

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RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	482.	(LBF)
MEASURED THRUST	860.	(LBF)
CALCULATED SPECIFIC IMPULSE	1205.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2149.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.3295	
MEASURED THRUST COEFFICIENT	0.5874	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3588.	(LBF)
NET THRUST	648.	(LBF)
SPECIFIC IMPULSE	1619.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.4425	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.6	(LBF)
INLET MOMENTUM CHANGE	-393.9	(LBF)
COMBUSTOR FRICTION DRAG	179.5	(LBF)
COMBUSTOR STRUT DRAG	-20.92	(LBF)
COMBUSTOR MOMENTUM CHANGE	224.	(LBF)
NOZZLE FRICTION DRAG	26.12	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	652.	(LBF)
NOZZLE PRESSURE INTEGRAL	678.	(LBF)
EXTERNAL FRICTION DRAG	39.13	(LBF)
EXTERNAL PRESSURE INTEGRAL	-679.	(LBF)
TOTAL EXTERNAL DRAG	-718.	(LBF)
TOTAL STRUT DRAG	-20.92	(LBF)
CAVITY FORCE	-619.	(LBF)
CALCULATED LOAD CELL FORCE	-855.	(LBF)
MEASURED LOAD CELL FORCE	-477.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0, 0.0,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7150	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.599	(IN)
NOZZLE SHROUD TRAILING EDGE	74.939	(IN)
NOZZLE PLUG TRAILING EDGE	88.691	(IN)
STRUT LEADING EDGE	57.855	(IN)
STRUT TRAILING EDGE	66.455	(IN)
COMBUSTOR EXIT	66.455	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9912	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1026	
DELTA PT2	0.0896	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3493	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1039	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9089	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9147	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9324	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8816	
ENTHALPY AT PO - SUPERSONIC	-42.09	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-6.12	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0255
EQUIVALENCE RATIO	0.769
COMBUSTOR EFFICIENCY	0.600
TOTAL PRESSURE RATIO	0.0638
COMBUSTOR EFFECTIVENESS	0.5716
INJECTOR DISCHARGE COEFFICIENTS	1.1211, 0.3309, 0.8157,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9735
NOZZLE COEFFICIENT - CT	0.8999
PROCESS EFFICIENCY	0.9488
KINETIC ENERGY EFFICIENCY	0.9419

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	E
1B	42.700	B
1C	44.300	A
2A	50.175	
2C	46.250	
3A	55.465	
3B	57.650	
4	46.200	C

Reading 90

t = 235.02 sec.

The inlet was in an unstarted condition.

290

C.4

READING = 0090 BLOCK = 124 TIME = 235.065 MACH 7.3 PT = 995.719 TT = 2931.2

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	F	A/AC	MOMTM	C	TVAC	PHI	ETAC
WIND TUNNEL		1	0 5														
0.000	995.749	2931	648.8(774)	1.2949	28.956	2553											
0.000	0.155	280	-61.8(67)	1.3958	28.955	819	7.277	5963	1.601	0.06166	6.972	0.4415	1310	5.714	187.8		
SPIKE TIP FS		2	0 7														
0.600	11.387	2931	648.8(774)	1.2948	28.955	2553											
0.600	10.496	2877	632.6(759)	1.2966	28.955	2531	0.356	902	2.107	0.06166	6.972	0.4415	1302	0.864	198.3		
WIND TUNNEL		3	0 0														
0.000	995.749	2931	648.8(774)	1.2949	28.956	2553											
0.000	0.169	288	-60.0(69)	1.3961	28.955	830	7.173	5956	1.601	0.06577	6.972	0.4139	1309	6.088	187.7		
SPIKE TIP NS		4	0 0														
0.600	11.387	2931	648.8(774)	1.2948	28.955	2553											
0.600	10.357	2868	629.9(756)	1.2969	28.955	2527	0.385	972	2.107	0.06577	6.972	0.4139	1309	0.994	187.7		
INLET THROAT		5	0 14														
40.400	32.851	2461	509.7(638)	1.3101	28.955	2353											
40.400	17.791	2124	413.4(542)	1.3215	28.955	2195	1.000	2195	1.983	0.34462	6.972	0.0790	2004	11.758	287.4		
COMBUSTOR	0	6	1 4														
40.410	56.150	4038	559.6(1415)	1.2350	23.384	3256											
40.410	17.616	3207	207.3(1088)	1.2701	23.418	2941	1.428	4199	2.560	0.35349	7.153	0.0790	1308	23.068	182.9	0.79	0.56
COMBUSTOR	0	7	2 3														
40.727	55.171	4058	551.7(1422)	1.2333	23.424	3259											
40.727	18.603	3268	214.9(1111)	1.2671	23.460	2962	1.386	4105	2.561	0.35477	7.153	0.0787	1302	22.635	182.1	0.79	0.57
COMBUSTOR	0	8	3 7														
41.217	72.853	3226	539.1(1112)	1.2811	22.624	3014											
41.217	10.504	2058	95.4(674)	1.3222	22.626	2445	1.927	4712	2.484	0.35214	7.153	0.0793	1275	25.785	178.3	0.79	0.32
COMBUSTOR	0	9	4 4														
41.500	68.149	3130	531.6(1076)	1.2854	22.552	2978											
41.500	10.567	2023	113.6(663)	1.3245	22.553	2431											
							1.882	4574	2.482	0.34861	7.153	0.0801	1248	24.779	174.5	0.79	0.29
COMBUSTOR	0	10	5 5														
42.460	56.831	2813	505.0(959)	1.2994	22.326	2853											
42.460	9.958	1850	147.7(605)	1.3343	22.327	2344	1.804	4228	2.467	0.32887	7.153	0.0849	1171	21.610	163.7	0.79	0.22
COMBUSTOR	0	11	6 16														
42.702	52.777	2149	545.0(881)	1.3350	17.754	2834											
42.702	10.029	1396	219.7(556)	1.3660	17.754	2311	1.746	4034	2.814	0.33289	7.328	0.0859	1150	20.870	157.5	1.55	0.05
COMBUSTOR	0	12	7 2														
42.712	52.700	2147	544.7(880)	1.3351	17.754	2833											
42.712	10.032	1396	220.0(555)	1.3661	17.754	2311	1.744	4031	2.814	0.33283	7.328	0.0860	1153	20.809	157.4	1.55	0.05
COMBUSTOR	0	13	8 3														
42.777	52.081	2137	543.0(875)	1.3355	17.749	2827											
42.777	10.050	1394	221.9(555)	1.3662	17.749	2309	1.736	4008	2.813	0.33201	7.328	0.0862	1149	20.679	156.8	1.55	0.05
COMBUSTOR	0	14	9 6														
44.300	36.160	1969	520.0(861)	1.3431	16.652	2824											
44.300	14.516	1569	327.0(668)	1.3602	16.652	2524	1.231	3107	2.967	0.30987	7.390	0.0931	1074	14.963	145.4	1.82	0.04
COMBUSTOR	0	15	10 2														
44.310	36.110	1990	519.8(862)	1.3431	16.653	2825											
44.310	14.546	1571	327.4(669)	1.3601	16.653	2525	1.229	3103	2.967	0.30965	7.390	0.0932	1074	14.930	145.4	1.82	0.04
COMBUSTOR	0	16	11 3														
44.800	34.615	1985	511.9(859)	1.3432	16.660	2821											
44.800	15.983	1620	346.0(693)	1.3577	16.660	2565	1.123	2881	2.971	0.30561	7.390	0.0944	1063	13.683	143.8	1.82	0.04
COMBUSTOR	0	17	12 3														
45.497	33.923	1970	501.3(852)	1.3436	16.665	2810											
45.497	16.944	1646	352.0(703)	1.3567	16.665	2581	1.059	2733	2.970	0.30349	7.390	0.0951	1055	12.891	142.8	1.82	0.04
COMBUSTOR	0	18	13 5														
46.202	33.564	1896	501.1(848)	1.3460	16.049	2813											
46.202	15.214	1541	333.4(680)	1.3665	16.049	2550	1.136	2897	3.041	0.29720	7.028	0.0976	1064	13.382	143.2	1.99	0.04

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	*/A	*	A/AF	MCMTW	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	14 2														
46.212	33.542	1897	500.9(949)	1.3472	16.051	2819											
46.212	15.190	1541	332.8(680)	1.3624	16.051	2550	1.137	2900	3.041	0.29684	7.428	0.0977	1064	13.379	143.3	1.99	0.04
COMBUSTOR	0	20	15 2														
46.260	33.501	1900	500.0(849)	1.3477	16.053	2816											
46.260	15.072	1541	330.4(680)	1.3624	16.053	2550	1.142	2913	3.042	0.29594	7.428	0.0980	1065	13.396	143.4	1.99	0.04
COMBUSTOR	0	21	16 4														
47.310	32.629	1953	477.4(873)	1.3445	16.112	2847											
47.310	12.496	1520	272.7(669)	1.3623	16.112	2528	1.266	3200	3.054	0.27426	7.428	0.1057	1092	13.640	147.0	1.99	0.05
COMBUSTOR	0	22	17 4														
48.110	31.355	2024	458.5(905)	1.3406	16.176	2888											
48.110	10.972	1541	229.7(677)	1.3600	16.176	2538	1.333	3383	3.072	0.25212	7.428	0.1150	1119	13.255	150.6	1.99	0.07
COMBUSTOR	0	23	18 5														
50.187	27.686	2202	416.9(986)	1.3309	16.334	2986											
50.187	6.838	1538	101.6(671)	1.3580	16.334	2522	1.575	3972	3.116	0.18662	7.428	0.1554	1200	11.519	162.1	1.99	0.11
COMBUSTOR	0	24	19 3														
50.717	28.279	2166	408.8(969)	1.3325	16.323	2965											
50.717	5.662	1430	61.0(622)	1.3631	16.323	2436	1.712	4172	3.106	0.17453	7.428	0.1662	1219	11.315	164.1	1.99	0.11
COMBUSTOR	0	25	20 5														
52.127	22.255	2475	390.2(1110)	1.3172	16.538	3131											
52.127	5.200	1802	64.0(789)	1.3434	16.538	2698	1.498	4040	3.182	0.14875	7.428	0.1950	1257	9.340	169.2	1.99	0.16
COMBUSTOR	0	26	21 4														
54.227	23.618	2340	364.7(1052)	1.3231	16.431	3061											
54.227	3.650	1454	-57.2(631)	1.3595	16.431	2446	1.878	4594	3.161	0.12261	7.470	0.2379	1304	8.754	174.5	1.98	0.14
COMBUSTOR	0	27	22 6														
54.727	33.682	2075	359.9(928)	1.3359	16.275	2910											
54.727	2.300	1019	-129.5(439)	1.3808	16.275	2074	2.387	4949	3.072	0.11760	7.470	0.2480	1310	9.044	175.3	1.98	0.11
COMBUSTOR	0	28	23 5														
55.477	26.845	2206	352.6(989)	1.3293	16.363	2985											
55.477	2.586	1200	-119.0(518)	1.3721	16.363	2237	2.172	4858	3.122	0.11086	7.470	0.2631	1317	8.369	176.3	1.98	0.13
COMBUSTOR	0	29	24 4														
55.760	24.927	2257	350.0(1013)	1.3267	16.398	3013											
55.760	2.693	1270	-114.8(548)	1.3685	16.398	2296	2.101	4823	3.139	0.10852	7.470	0.2688	1320	8.134	176.7	1.98	0.14
COMBUSTOR	0	30	25 5														
56.237	18.436	2483	346.2(1120)	1.3158	16.544	3134											
56.237	2.466	1497	-126.4(648)	1.3558	16.545	2470	1.969	4863	3.210	0.08576	7.470	0.3401	1359	6.482	181.9	1.98	0.17
COMBUSTOR	0	31	26 4														
57.662	17.714	2522	337.4(1138)	1.3138	16.580	3152											
57.662	2.203	1502	-152.0(649)	1.3551	16.580	2470	2.003	4948	3.219	0.07930	7.470	0.3678	1375	6.098	184.0	1.98	0.18
COMBUSTOR	0	32	27 5														
57.717	14.088	2803	337.1(1273)	1.3004	16.765	3288											
57.717	3.072	1944	-87.7(850)	1.3325	16.765	2771	1.664	4610	3.282	0.07904	7.470	0.3690	1375	5.663	184.1	1.98	0.22
COMBUSTOR	0	33	28 3														
57.857	14.035	2804	336.3(1273)	1.3003	16.767	3288											
57.857	3.041	1941	-90.0(849)	1.3326	16.767	2770	1.668	4619	3.283	0.07849	7.470	0.3716	1376	5.634	184.3	1.98	0.22
COMBUSTOR	0	34	29 9														
57.937	18.702	2483	335.9(1119)	1.3155	16.558	3132											
57.937	2.121	1434	-165.5(619)	1.3586	16.558	2419	2.071	5009	3.207	0.07938	7.470	0.3674	1377	6.179	184.4	1.98	0.17
COMBUSTOR	0	35	30 4														
58.443	20.695	2414	333.0(1086)	1.3188	16.517	3096											
58.443	1.896	1312	-189.3(565)	1.3649	16.517	2322	2.202	5112	3.185	0.07899	7.470	0.3693	1381	6.275	184.9	1.98	0.17
COMBUSTOR	0	36	31 4														
59.167	24.486	2308	328.8(1036)	1.3238	16.456	3038											
59.167	1.575	1133	-221.8(486)	1.3738	16.456	2168	2.421	5249	3.148	0.07772	7.470	0.3753	1385	6.340	185.4	1.98	0.15
COMBUSTOR	0	37	32 6														
60.187	14.080	2845	322.8(1293)	1.2981	16.812	3305											
60.187	2.975	1961	-114.6(857)	1.3309	16.812	2778	1.684	4680	3.285	0.07722	7.470	0.3777	1389	5.616	185.9	1.98	0.23

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                  P      T     H                GAMMA                 MACH  VEL
COMBUSTOR          0   38   35   5
62.197       12.084 3270   309.7(1959) 1.2762 17.125 3481
62.197        4.862 2668    -3.2(1192) 1.2966 17.126 3171 1.248 3950 3.400 0.17991  7.470 1.365   1358  4.913 185.6 1.98 0.31
COMBUSTOR          0   39   34   5
63.617       14.125 2934   299.7(1334) 1.2933 16.902 3341
63.617        3.487 2110  -112.6( 925) 1.3233 16.903 2866 1.580 8539 3.292 0.08268  7.470 0.3593   1366  5.790 185.5 1.98 0.26
COMBUSTOR          0   40   35   5
66.081       11.711 3253   282.0(1490) 1.2765 17.148 3470
66.081        4.736 2658   -26.5(1186) 1.2986 17.151 3165 1.244 3934 3.345 0.07780  7.470 0.3749   1363  4.756 185.1 1.98 0.31
COMBUSTOR          0   41   36   3
66.457       10.972 3224   290.2(1476) 1.2779 17.131 3458
66.457        4.248 2606   -39.7(1161) 1.3007 17.134 3136 1.274 4001 3.347 0.07233  7.470 0.4032   1362  4.497 185.0 1.98 0.31
COMBUSTOR   REGEN   42   37   21
66.457       10.972 3636   506.5(1692) 1.2575 17.120 3644
66.457        5.361 3125   227.9(1424) 1.2809 17.131 3408 1.099 3747 3.414 0.07233  7.470 0.4032   1424  4.212 190.6 1.98 0.31
NOZZLE   AE         43   38   4
88.693       10.972 3224   280.2(1463) 1.2779 17.131 3458
88.693        0.259 1302  -654.4( 547) 1.3569 17.134 2265 3.020 6838 3.347 0.01506  7.470 1.9371   1716  1.600 229.7 1.98 0.31
NOZZLE   PO         44   39   4
88.693       10.972 3224   280.2(1463) 1.2779 17.131 3458
88.693        0.159 1136  -727.0( 475) 1.3680 17.134 2121 3.346 7099 3.307 0.01071  7.470 2.7233   1756  1.182 235.1 1.98 0.31
NOZZLE   AE REGEN   45   40   4
88.693       10.972 3636   508.5(1692) 1.2575 17.120 3644
88.693        0.293 1561  -538.6( 663) 1.3439 17.134 2468 2.933 7239 3.414 0.01506  7.470 1.9371   1826  1.694 244.4 1.98 0.31
NOZZLE   PO REGEN   46   41   4
88.693       10.972 3636   508.5(1692) 1.2575 17.120 3644
88.693        0.155 1323  -645.3( 556) 1.3559 17.134 2281 3.330 7598 3.414 0.00984  7.470 2.9626   1982  1.163 251.9 1.98 0.31
FICTIVE COMBUSTR    64   59   0
66.457      995.749 4460   280.2(2100) 1.2438 18.064 3907
66.457        0.155  626-1621.9( 242) 1.1936 18.782 1406 6.938 9756 2.919 0.02930  7.470 0.9955   2305  4.402 308.5 1.98 1.00
FICTIVE NOZZLE      65   60   0
88.693       22.166 3887   445.2(1323) 1.2355 23.608 3180
88.693        0.665 1794  -365.1( 565) 1.3222 23.644 2234 2.851 9409 2.607 0.01506  7.470 1.9371      0  3.575 292.5 0.77 0.31
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READING = 0090 BLOCK = 120 TIME = 235.023 MACH 7.3 PT = 995.749 TT = 2731.2

XABS	P-IR	P-OR	PRA	QOX	Q-IR	Q-OR	CAVALI	P-IR/P80	P-IR/PTO	P-OR/P80	P-OR/PTO
6.981E-01	6.050E-01	0.000	-2.709E-01	0.000	0.000	0.000	2.471E-02	3.913E 00	6.076E-04	0.000	0.000
1.836E 01	6.050E-01	0.000	-2.017E 01	0.000	0.000	0.000	1.634E 02	3.913E 00	6.076E-04	0.000	0.000
3.070E 01	2.525E 00	0.000	-1.470E 02	0.000	0.000	0.000	5.953E 02	1.633E 01	2.536E-03	0.000	0.000
3.508E 01	4.688E 00	0.000	-3.808E 02	0.000	0.000	0.000	6.804E 02	3.032E 01	4.708E-03	0.000	0.000
3.555E 01	5.160E 00	0.000	-4.257E 02	0.000	0.000	0.000	7.013E 02	3.338E 01	5.182E-03	0.000	0.000
3.606E 01	5.480E 00	0.000	-4.797E 02	-5.298E 02	-5.298E 02	0.000	7.246E 02	3.545E 01	5.503E-03	0.000	0.000
3.648E 01	5.766E 00	0.000	-5.278E 02	-5.426E 02	-5.426E 02	0.000	7.443E 02	3.729E 01	5.790E-03	0.000	0.000
3.659E 01	5.851E 00	3.136E 00	-5.743E 02	-5.462E 02	-5.462E 02	0.000	7.497E 02	3.785E 01	5.876E-03	2.029E 01	3.150E-03
3.660E 01	5.856E 00	3.182E 00	-5.748E 02	-5.464E 02	-5.464E 02	0.000	7.500E 02	3.788E 01	5.881E-03	2.058E 01	3.196E-03
3.701E 01	6.160E 00	6.310E 00	-6.037E 02	-5.595E 02	-5.595E 02	0.000	7.924E 02	3.985E 01	6.186E-03	4.082E 01	6.337E-03
3.727E 01	7.187E 00	8.275E 00	-6.197E 02	-5.680E 02	-5.680E 02	0.000	8.194E 02	4.649E 01	7.217E-03	5.353E 01	8.310E-03
3.803E 01	1.023E 01	1.001E 01	-6.879E 02	-5.947E 02	-5.947E 02	0.000	9.015E 02	6.620E 01	1.028E-02	6.475E 01	1.005E-02
3.873E 01	1.095E 01	1.159E 01	-7.509E 02	-7.104E 02	-6.260E 02	-8.437E 01	9.792E 02	7.083E 01	1.100E-02	7.499E 01	1.164E-02
3.875E 01	1.097E 01	1.166E 01	-7.524E 02	-7.134E 02	-6.272E 02	-8.617E 01	9.818E 02	7.098E 01	1.102E-02	7.539E 01	1.171E-02
3.901E 01	1.124E 01	1.235E 01	-7.661E 02	-7.486E 02	-6.421E 02	-1.064E 02	1.011E 03	7.270E 01	1.129E-02	7.988E 01	1.240E-02
3.950E 01	1.390E 01	1.366E 01	-7.871E 02	-8.200E 02	-6.755E 02	-1.445E 02	1.067E 03	6.994E 01	1.396E-02	8.835E 01	1.372E-02
3.975E 01	1.617E 01	1.432E 01	-7.959E 02	-8.588E 02	-6.952E 02	-1.636E 02	1.096E 03	1.046E 02	1.624E-02	9.262E 01	1.438E-02
4.000E 01	1.859E 01	1.528E 01	-8.000E 02	-9.006E 02	-7.174E 02	-1.831E 02	1.125E 03	1.197E 02	1.858E-02	9.887E 01	1.535E-02
4.022E 01	1.856E 01	1.611E 01	-8.107E 02	-9.377E 02	-7.379E 02	-1.909E 02	1.150E 03	1.201E 02	1.864E-02	1.042E 02	1.618E-02
4.040E 01	1.861E 01	1.697E 01	-8.151E 02	-9.696E 02	-7.556E 02	-2.139E 02	1.172E 03	1.204E 02	1.869E-02	1.098E 02	1.704E-02
4.041E 01	1.862E 01	1.702E 01	-8.151E 02	-9.713E 02	-7.566E 02	-2.147E 02	1.173E 03	1.204E 02	1.870E-02	1.101E 02	1.709E-02
4.073E 01	1.871E 01	1.850E 01	-8.182E 02	-1.028E 03	-7.887E 02	-2.390E 02	1.210E 03	1.210E 02	1.879E-02	1.197E 02	1.858E-02
4.122E 01	1.884E 01	2.162E 00	-8.399E 02	-1.118E 03	-8.416E 02	-2.760E 02	1.268E 03	1.219E 02	1.893E-02	1.399E 01	2.172E-03
4.150E 01	1.892E 01	2.209E 00	-8.642E 02	-1.171E 03	-8.743E 02	-2.969E 02	1.301E 03	1.224E 02	1.901E-02	1.429E 01	2.218E-03
4.246E 01	1.755E 01	2.367E 00	-9.323E 02	-1.362E 03	-9.869E 02	-3.790E 02	1.415E 03	1.135E 02	1.762E-02	1.531E 01	2.377E-03
4.270E 01	1.765E 01	2.406E 00	-9.470E 02	-1.411E 03	-1.014E 03	-3.964E 02	1.444E 03	1.142E 02	1.773E-02	1.557E 01	2.417E-03
4.271E 01	1.765E 01	2.408E 00	-9.475E 02	-1.413E 03	-1.015E 03	-3.973E 02	1.445E 03	1.142E 02	1.773E-02	1.558E 01	2.418E-03
4.278E 01	1.768E 01	2.419E 00	-9.513E 02	-1.425E 03	-1.022E 03	-4.030E 02	1.453E 03	1.144E 02	1.776E-02	1.565E 01	2.429E-03
4.430E 01	1.832E 01	1.072E 01	-1.006E 03	-1.670E 03	-1.155E 03	-5.152E 02	1.636E 03	1.185E 02	1.839E-02	6.932E 01	1.076E-02
4.431E 01	1.832E 01	1.077E 01	-1.006E 03	-1.671E 03	-1.155E 03	-5.158E 02	1.638E 03	1.185E 02	1.840E-02	6.967E 01	1.082E-02
4.480E 01	1.852E 01	1.344E 01	-1.014E 03	-1.730E 03	-1.185E 03	-5.450E 02	1.697E 03	1.198E 02	1.860E-02	8.694E 01	1.350E-02
4.550E 01	1.665E 01	1.724E 01	-1.018E 03	-1.808E 03	-1.222E 03	-5.867E 02	1.782E 03	1.077E 02	1.672E-02	1.115E 02	1.731E-02
4.620E 01	1.475E 01	1.567E 01	-1.006E 03	-1.896E 03	-1.258E 03	-6.398E 02	1.869E 03	9.544E 01	1.482E-02	1.014E 02	1.574E-02
4.621E 01	1.473E 01	1.565E 01	-1.005E 03	-1.900E 03	-1.259E 03	-6.407E 02	1.870E 03	9.527E 01	1.479E-02	1.012E 02	1.572E-02
4.626E 01	1.460E 01	1.555E 01	-1.004E 03	-1.907E 03	-1.261E 03	-6.451E 02	1.876E 03	9.443E 01	1.466E-02	1.006E 02	1.561E-02
4.731E 01	1.177E 01	1.322E 01	-9.715E 02	-2.075E 03	-1.315E 03	-7.598E 02	2.005E 03	7.617E 01	1.183E-02	8.549E 01	1.327E-02
4.811E 01	1.050E 01	1.184E 01	-9.402E 02	-2.215E 03	-1.355E 03	-8.599E 02	2.104E 03	6.792E 01	1.054E-02	7.402E 01	1.149E-02
5.019E 01	6.838E 00	6.838E 00	-8.456E 02	-2.524E 03	-1.457E 03	-1.068E 03	2.364E 03	4.423E 01	6.867E-03	4.423E 01	6.867E-03
5.072E 01	5.662E 00	5.662E 00	-8.284E 02	-2.584E 03	-1.482E 03	-1.102E 03	2.430E 03	3.663E 01	5.687E-03	3.663E 01	5.687E-03
5.213E 01	6.200E 00	6.200E 00	-7.845E 02	-2.722E 03	-1.547E 03	-1.175E 03	2.608E 03	4.010E 01	6.226E-03	4.010E 01	6.226E-03
5.423E 01	3.650E 00	3.650E 00	-7.303E 02	-2.891E 03	-1.641E 03	-1.250E 03	2.874E 03	2.361E 01	3.666E-03	2.361E 01	3.666E-03
5.473E 01	2.300E 00	2.300E 00	-7.225E 02	-2.926E 03	-1.663E 03	-1.263E 03	2.938E 03	1.488E 01	2.310E-03	1.488E 01	2.310E-03
5.548E 01	2.586E 00	2.586E 00	-7.131E 02	-2.980E 03	-1.695E 03	-1.285E 03	3.033E 03	1.672E 01	2.597E-03	1.672E 01	2.597E-03
5.576E 01	2.693E 00	2.693E 00	-7.093E 02	-3.000E 03	-1.707E 03	-1.293E 03	3.070E 03	1.742E 01	2.705E-03	1.742E 01	2.705E-03
5.624E 01	2.056E 00	2.875E 00	-6.699E 02	-3.028E 03	-1.723E 03	-1.305E 03	3.102E 03	1.330E 01	2.065E-03	1.860E 01	2.887E-03
5.766E 01	2.243E 00	2.243E 00	-6.516E 02	-3.094E 03	-1.762E 03	-1.332E 03	3.209E 03	1.451E 01	2.292E-03	1.451E 01	2.252E-03
5.772E 01	3.925E 00	2.218E 00	-6.510E 02	-3.097E 03	-1.763E 03	-1.333E 03	3.217E 03	2.539E 01	3.942E-03	1.435E 01	2.228E-03
5.786E 01	3.925E 00	2.156E 00	-6.496E 02	-3.102E 03	-1.767E 03	-1.335E 03	3.234E 03	2.539E 01	3.942E-03	1.395E 01	2.165E-03
5.794E 01	2.121E 00	2.121E 00	-6.487E 02	-3.106E 03	-1.769E 03	-1.337E 03	3.245E 03	1.372E 01	2.130E-03	1.372E 01	2.130E-03
5.844E 01	1.896E 00	1.896E 00	-6.442E 02	-3.127E 03	-1.782E 03	-1.345E 03	3.309E 03	1.227E 01	1.904E-03	1.227E 01	1.904E-03
5.917E 01	1.575E 00	1.575E 00	-6.394E 02	-3.158E 03	-1.799E 03	-1.359E 03	3.402E 03	1.019E 01	1.582E-03	1.019E 01	1.582E-03
6.019E 01	2.975E 00	2.975E 00	-6.342E 02	-3.203E 03	-1.822E 03	-1.381E 03	3.532E 03	1.924E 01	2.988E-03	1.924E 01	2.988E-03
6.220E 01	4.862E 00	4.862E 00	-6.333E 02	-3.301E 03	-1.864E 03	-1.437E 03	3.790E 03	3.145E 01	4.883E-03	3.145E 01	4.883E-03
6.362E 01	3.487E 00	3.487E 00	-6.333E 02	-3.376E 03	-1.895E 03	-1.481E 03	3.972E 03	2.256E 01	3.502E-03	2.256E 01	3.502E-03
6.608E 01	4.736E 00	4.736E 00	-6.333E 02	-3.502E 03	-1.958E 03	-1.544E 03	4.269E 03	3.063E 01	4.756E-03	3.063E 01	4.756E-03
6.646E 01	3.570E 00	4.926E 00	-6.333E 02	-3.522E 03	-1.969E 03	-1.553E 03	4.337E 03	2.309E 01	3.585E-03	3.186E 01	4.947E-03

XARS	P-IF	P-PG	FPA	QDY	-MIP	-MCP	CAPALL	P-IF/PSI	P-IP/PIP	P-PG/PSU	P-PG/PIP
6.650E 01	3.570E 00	[illegible]	-6.333E 02	-3.520E 03	-1.970E 03	[illegible]	[illegible]	2.306E 01	[illegible]	5.139E 01	[illegible]
6.670E 01	3.077E 00	5.007E 00	-6.333E 02	-3.535E 03	-1.976E 03	-1.559E 03	[illegible]	2.249E 01	3.492E-03	5.265E 01	5.069E-03
6.836E 01	2.705E 00	2.610E 00	-5.938E 02	-3.626E 03	-2.019E 03	-1.596E 03	4.504E 03	1.790E 01	2.717E-03	1.688E 01	2.621E-03
6.980E 01	2.385E 00	2.347E 00	-4.728E 02	-3.704E 03	-2.051E 03	-1.658E 03	4.761E 03	1.543E 01	2.395E-03	1.518E 01	2.357E-03
7.052E 01	2.185E 00	2.215E 00	-4.130E 02	-3.756E 03	-2.066E 03	-1.690E 03	4.849E 03	1.413E 01	2.194E-03	1.433E 01	2.224E-03
7.113E 01	2.015E 00	2.251E 00	-3.657E 02	-3.796E 03	-2.077E 03	-1.719E 03	4.925E 03	1.303E 01	2.024E-03	1.456E 01	2.261E-03
7.251E 01	1.840E 00	2.334E 00	-2.688E 02	-3.879E 03	-2.101E 03	-1.778E 03	5.089E 03	1.190E 01	1.848E-03	1.510E 01	2.344E-03
7.404E 01	1.685E 00	2.425E 00	-1.713E 02	-3.959E 03	-2.124E 03	-1.835E 03	5.273E 03	1.090E 01	1.692E-03	1.569E 01	2.435E-03
7.419E 01	1.670E 00	2.329E 00	-1.627E 02	-3.966E 03	-2.126E 03	-1.841E 03	5.291E 03	1.080E 01	1.677E-03	1.507E 01	2.339E-03
7.494E 01	1.674E 00	1.850E 00	-9.700E 01	-4.008E 03	-2.134E 03	-1.873E 03	5.375E 03	1.083E 01	1.681E-03	1.197E 01	1.858E-03
7.494E 01	1.674E 00	1.847E 00	-9.347E 01	-4.008E 03	-2.134E 03	-1.873E 03	5.375E 03	1.083E 01	1.681E-03	1.195E 01	1.855E-03
7.627E 01	1.680E 00	0.000	-5.805E 01	-4.086E 03	-2.148E 03	-1.901E 03	5.427E 03	1.087E 01	1.687E-03	0.000	0.000
7.912E 01	1.885E 00	0.000	1.323E 01	-4.110E 03	-2.169E 03	-1.901E 03	5.525E 03	1.219E 01	1.893E-03	0.000	0.000
8.302E 01	1.905E 00	0.000	9.423E 01	-4.120E 03	-2.167E 03	-1.941E 03	5.630E 03	1.232E 01	1.913E-03	0.000	0.000
8.583E 01	2.035E 00	0.000	1.380E 02	-4.141E 03	-2.200E 03	-1.901E 03	5.685E 03	1.316E 01	2.044E-03	0.000	0.000
8.869E 01	2.230E 00	0.000	1.895E 02	-4.164E 03	-2.223E 03	-1.941E 03	5.707E 03	1.442E 01	2.240E-03	0.000	0.000
8.869E 01	2.230E 00	0.000	1.895E 02	-4.164E 03	-2.223E 03	-1.941E 03	5.707E 03	1.443E 01	2.240E-03	0.000	0.000

X	UDRAG	CDRAG	CF	HC
4.040E 01	1.211E 02	1.211E 02	3.622E-03	2.809E-02
4.041E 01	3.087E-02	1.211E 02	3.611E-03	4.286E-02
4.073E 01	3.103E 00	1.242E 02	3.711E-03	4.265E-02
4.122E 01	5.211E 00	1.294E 02	3.762E-03	3.021E-02
4.150E 01	2.977E 00	1.324E 02	3.286E-03	3.374E-02
4.246E 01	8.860E 00	1.413E 02	3.412E-03	3.002E-02
4.270E 01	2.355E 00	1.436E 02	4.257E-03	2.721E-02
4.271E 01	8.928E-02	1.437E 02	3.040E-03	3.771E-02
4.278E 01	4.926E-01	1.442E 02	3.048E-03	3.759E-02
4.430E 01	1.101E 01	1.552E 02	3.685E-03	3.666E-02
4.431E 01	6.730E-02	1.553E 02	3.314E-03	4.138E-02
4.480E 01	2.842E 00	1.581E 02	3.368E-03	4.187E-02
4.550E 01	3.828E 00	1.619E 02	3.404E-03	4.199E-02
4.620E 01	3.964E 00	1.659E 02	3.582E-03	3.804E-02
4.621E 01	5.713E-02	1.660E 02	3.328E-03	4.137E-02
4.626E 01	2.607E-01	1.662E 02	3.324E-03	4.125E-02
4.731E 01	5.692E 00	1.719E 02	3.179E-03	3.665E-02
4.811E 01	4.224E 00	1.761E 02	3.159E-03	3.542E-02
5.019E 01	9.758E 00	1.859E 02	2.920E-03	2.666E-02
5.072E 01	2.293E 00	1.882E 02	3.121E-03	2.194E-02
5.213E 01	5.631E 00	1.938E 02	3.021E-03	2.259E-02
5.423E 01	7.463E 00	2.013E 02	3.175E-03	1.471E-02
5.473E 01	1.751E 00	2.030E 02	3.000E-03	1.129E-02
5.548E 01	2.350E 00	2.054E 02	2.634E-03	1.326E-02
5.576E 01	8.154E-01	2.062E 02	2.821E-03	1.282E-02
5.624E 01	6.576E-01	2.069E 02	2.773E-03	1.130E-02
5.766E 01	1.943E 00	2.088E 02	2.965E-03	9.831E-03
5.772E 01	1.253E-01	2.089E 02	3.084E-03	1.162E-02
5.786E 01	3.212E-01	2.093E 02	3.314E-03	1.081E-02
5.794E 01	2.114E-01	2.095E 02	3.681E-03	7.891E-03
5.844E 01	1.326E 00	2.108E 02	2.923E-03	8.797E-03
5.917E 01	1.673E 00	2.125E 02	2.805E-03	7.941E-03
6.019E 01	2.189E 00	2.147E 02	2.797E-03	1.207E-02
6.220E 01	4.182E 00	2.186E 02	3.363E-03	1.353E-02
6.362E 01	3.369E 00	2.222E 02	3.537E-03	1.081E-02
6.608E 01	5.811E 00	2.280E 02	3.435E-03	1.297E-02
6.646E 01	7.921E-01	2.286E 02	3.663E-03	1.135E-02
6.650E 01	8.391E-02	2.289E 02	3.607E-03	1.125E-02
6.670E 01	4.199E-01	2.293E 02	3.605E-03	1.125E-02
6.836E 01	3.422E 00	2.327E 02	3.476E-03	8.857E-03
6.980E 01	2.700E 00	2.354E 02	3.439E-03	8.253E-03
7.052E 01	1.302E 00	2.367E 02	3.417E-03	7.889E-03
7.113E 01	1.078E 00	2.378E 02	3.407E-03	7.734E-03
7.251E 01	2.399E 00	2.402E 02	3.394E-03	7.611E-03
7.404E 01	2.636E 00	2.428E 02	3.386E-03	7.523E-03
7.419E 01	2.447E-01	2.431E 02	3.380E-03	7.396E-03
7.494E 01	1.167E 00	2.442E 02	3.353E-03	6.826E-03
7.494E 01	2.184E-03	2.443E 02	3.352E-03	6.822E-03
7.627E 01	6.924E-01	2.449E 02	3.336E-03	6.606E-03
7.912E 01	1.323E 00	2.463E 02	3.342E-03	7.065E-03
8.302E 01	1.439E 00	2.477E 02	3.324E-03	7.063E-03
8.583E 01	7.543E-01	2.485E 02	3.322E-03	7.319E-03
8.869E 01	3.203E-01	2.488E 02	3.324E-03	7.698E-03
8.869E 01	0.000	2.488E 02	3.324E-03	7.699E-03

ORIGINAL PAGE IS OF POOR QUALITY

RAMJET PERFORMANCE

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                ENGINE PERFORMANCE

CALCULATED THRUST.......................... 7085.  (LBF)
MEASURED THRUST............................ 12632. (LBF)
CALCULATED SPECIFIC IMPULSE................ 1205.  (LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE.................. 2149.  (LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT.............. 0.3295
MEASURED THRUST COEFFICIENT................ 0.5874

        REGENERATIVE-COOLED ENGINE PERFORMANCE
                    CALCULATED
STREAM THRUST.............................. 52456. (LBF)
NET THRUST................................. 9241.  (LBF)
SPECIFIC IMPULSE........................... 1572.  (LBF-SEC/LBM)
THRUST COEFFICIENT......................... 0.4297

                MOMENTUM AND FORCES

INLET FRICTION DRAG........................ 121.1  (LBF)
INLET MOMENTUM CHANGE...................... ****** (LBF)
COMBUSTOR FRICTION DRAG.................... 107.7  (LBF)
COMBUSTOR STRUT DRAG....................... -9.11  (LBF)
COMBUSTOR MOMENTUM CHANGE.................. 3287.  (LBF)
NOZZLE FRICTION DRAG....................... 19.98  (LBF)
NOZZLE STRUT DRAG.......................... -0.00  (LBF)
NOZZLE MOMENTUM CHANGE..................... 9587.  (LBF)
NOZZLE PRESSURE INTEGRAL................... 823.   (LBF)
EXTERNAL FRICTION DRAG..................... 34.91  (LBF)
EXTERNAL PRESSURE INTEGRAL................. -535.  (LBF)
TOTAL EXTERNAL DRAG........................ ****** (LBF)
TOTAL STRUT DRAG........................... -9.11  (LBF)
CAVITY FORCE............................... -9090. (LBF)
CALCULATED LOAD CELL FORCE................. ****** (LBF)
MEASURED LOAD CELL FORCE................... -1078. (LBF)
FUEL VACUUM SPECIFIC IMPULSE      0.0,    0.0, -152.1,    0.0,

                    STATIONS

NOMINAL COWL LEADING EDGE.................. 34.884 (IN)
SPIKE TRANSLATION.......................... 1.7170 (IN)
INLET THROAT............................... 40.400 (IN)
COWL LEADING EDGE.......................... 36.601 (IN)
NOZZLE SHROUD TRAILING EDGE................ 74.941 (IN)
NOZZLE PLUG TRAILING EDGE.................. 88.693 (IN)
STRUT LEADING EDGE......................... 57.857 (IN)
STRUT TRAILING EDGE........................ 66.457 (IN)
COMBUSTOR EXIT............................. 66.457 (IN)

                      INLET

ANGLE OF ATTACK............................ 0.000 (DEGREES)
MASS FLOW RATIO............................ 0.4415
ADDITIVE DRAG COEFFICIENT.................. ******
LIMITING PRESSURE RECOVERY EFFICIENCY...... 0.0315
DELTA PT2.................................. 0.1025 (PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC....... 1.0000
TOTAL PRESSURE RECOVERY - SUBSONIC......... 0.0330
INLET PROCESS EFFICIENCY - SUPERSONIC...... 0.8392
INLET PROCESS EFFICIENCY - SUBSONIC........ 0.9147
KINETIC ENERGY EFFICIENCY - SUPERSONIC..... 0.6967
KINETIC ENERGY EFFICIENCY - SUBSONIC....... 0.8816
ENTHALPY AT P0 - SUPERSONIC................ 14.59 (BTU/LBM)
ENTHALPY AT P0 - SUBSONIC.................. -21.89 (BTU/LBM)

                    COMBUSTOR

FUEL-AIR RATIO............................. 0.0660
EQUIVALENCE RATIO.......................... 1.976
COMBUSTOR EFFICIENCY....................... 0.307
TOTAL PRESSURE RATIO....................... 0.0110
COMBUSTOR EFFECTIVENESS.................... 0.4457
INJECTOR DISCHARGE COEFFICIENTS  0.9433, 0.6423, 5.7343, 0.7369

                     NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS...... 1.2733
NOZZLE COEFFICIENT - CT.................... 1.2005
PROCESS EFFICIENCY......................... 0.9488
KINETIC ENERGY EFFICIENCY.................. 0.9419

                  FUEL INJECTORS

INJECTORS          STATION          VALVE
   1A               40.400            E
   1B               42.702            B
   1C               44.300            A
   2A               50.177
   2C               46.250
   3A               55.467
   3B               57.652
   4                46.202            C
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Reading 90

t = 246.72 sec.

RAMJET PERFORMANCE

SUMMARY REPORT

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	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	V/A	A	A/AC	MOMTM	F	IVAC	PHI	ETAP
WIND TUNNEL		1	0 5														
0.000	995.999	2935	649.9(775)	1.2948	28.956	2554											
0.000	0.155	281	-61.7(67)	1.3959	28.955	820	7.277	5967	1.801	0.06162	15.638	0.9909	2940	5.714	188.0		
SPIKE TIP NS		2	0 7														
0.600	11.437	2935	649.9(775)	1.2947	28.955	2554											
0.600	10.551	2881	633.8(760)	1.2964	28.955	2533	0.355	898	2.107	0.06162	15.638	0.9909	3114	0.860	199.1		
WIND TUNNEL		3	0 0														
0.000	995.999	2935	649.9(775)	1.2948	28.956	2554											
0.000	0.171	289	-59.8(69)	1.3962	28.955	832	7.165	5959	1.801	0.06602	16.757	0.9909	3147	6.114	187.8		
SPIKE TIP NS		4	0 0														
0.600	11.437	2935	649.9(775)	1.2947	28.955	2554											
0.600	10.403	2872	631.0(757)	1.2967	28.955	2529	0.385	973	2.107	0.06602	16.757	0.9909	3147	0.998	187.8		
INLET THROAT		5	0 4														
40.400	306.251	2853	625.2(751)	1.2975	28.956	2521											
40.400	10.129	1165	160.0(289)	1.3670	28.955	1668	2.893	4825	1.865	0.77296	15.638	0.0790	2550	57.958	163.1		
INLET UPNRSK		6	0 3														
40.400	306.251	2853	625.2(751)	1.2975	28.956	2521											
40.400	8.740	1139	148.2(277)	1.3699	28.955	1636	2.985	4885	1.865	0.70269	15.638	0.0869	2569	53.350	164.3		
INLET DNNRSK		7	0 4														
40.400	103.600	2853	625.2(751)	1.2975	28.955	2521											
40.400	90.392	2764	598.9(726)	1.3003	28.955	2484	0.462	1147	1.948	0.70269	15.638	0.0869	2569	12.524	164.3		
COMBUSTOR	0	8	1 21														
40.410	150.266	2758	652.3(868)	1.3056	23.964	2733											
40.410	13.162	1488	225.5(443)	1.3539	23.964	2045	2.260	4622	2.222	0.78561	15.896	0.0790	2550	56.425	160.4	0.50	0.07
COMBUSTOR	0	9	2 4														
40.727	180.105	2644	650.8(830)	1.3107	23.862	2687											
40.727	16.732	1460	254.3(435)	1.3564	23.862	2031	2.193	4454	2.199	0.78846	15.896	0.0787	2538	54.577	159.7	0.50	0.03
COMBUSTOR	0	10	3 21														
41.217	169.374	2575	648.4(807)	1.3138	23.804	2658											
41.217	12.288	1326	233.8(394)	1.3641	23.804	1943	2.344	4555	2.196	0.78261	15.896	0.0793	2500	55.395	157.3	0.50	0.00
COMBUSTOR	0	11	4 21														
41.500	154.610	2561	646.9(802)	1.3144	23.796	2652											
41.500	13.741	1391	257.5(414)	1.3607	23.795	1989	2.220	4415	2.202	0.77476	15.896	0.0801	2463	53.193	154.9	0.50	0.00
COMBUSTOR	0	12	5 21														
42.460	83.520	2546	641.9(797)	1.3149	23.794	2645											
42.460	5.584	1280	223.3(380)	1.3667	23.794	1912	2.393	4577	2.251	0.73090	15.896	0.0849	2383	51.986	149.9	0.50	0.00
COMBUSTOR	0	13	6 21														
42.712	83.576	2542	640.6(796)	1.3151	23.794	2643											
42.712	5.961	1300	229.7(386)	1.3656	23.794	1926	2.354	4535	2.250	0.72201	15.896	0.0860	2372	50.882	149.2	0.50	0.00
COMBUSTOR	0	14	7 21														
42.777	54.688	2901	640.3(915)	1.2984	24.133	2786											
42.777	6.059	1701	231.3(509)	1.3418	24.133	2168	2.067	4524	2.322	0.72022	15.896	0.0862	2369	50.636	149.0	0.50	0.15
COMBUSTOR	0	15	8 21														
44.310	86.589	2575	633.5(806)	1.3132	23.844	2656											
44.310	11.468	1555	291.5(466)	1.3518	23.844	2094	1.976	4137	2.251	0.66608	15.896	0.0932	2317	42.819	145.8	0.50	0.02
COMBUSTOR	0	16	9 21														
44.800	90.200	2524	631.5(789)	1.3155	23.801	2633											
44.800	13.197	1560	309.0(468)	1.3520	23.801	2099	1.914	4017	2.241	0.65740	15.896	0.0944	2304	41.042	144.9	0.50	0.00
COMBUSTOR	0	17	10 21														
45.497	88.896	2509	628.9(784)	1.3161	23.795	2627											
45.497	13.893	1577	316.8(473)	1.3512	23.795	2110	1.873	3951	2.241	0.65283	15.896	0.0951	2291	40.089	144.1	0.50	0.00
COMBUSTOR	0	18	11 21														
46.212	85.939	2500	626.2(781)	1.3164	23.794	2622											
46.212	12.395	1539	304.9(461)	1.3531	23.794	2086	1.923	4010	2.242	0.63525	15.896	0.0977	2291	39.587	144.1	0.50	0.00

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REACTING = 6090  BLOCK = 137  TIME = 246.725  ARCH  7.3  PI = 995.999  TI = 2934.9                                                PAGE  2

               P      T      H          GAMMA  MOLWT SONV  MACH  VEL    S      W/A      K      A/AT    MOMTM   Q     IVAC  PHT  ETAC
COMBUSTOR         0   19   12  21
46.260       45.741 2500  626.0( 781) 1.3164 23.794 2622
46.260       12.294 1536  304.0( 460) 1.3533 23.794 2088 1.965 4014 2.232 0.63331 15.896 0.0980   2292 39.567 104.2 0.50 0.00
COMBUSTOR         0   20   13  21
47.310       71.073 2616  622.3( 819) 1.3110 23.911 2670
47.310       10.094 1612  284.8( 483) 1.3483 23.911 2125 1.933 4110 2.271 0.58693 15.896 0.1087   2304 37.484 144.9 0.50 0.05
COMBUSTOR         0   21   14  21
48.110       76.646 2500  619.5( 781) 1.3162 23.811 2621
48.110        9.575 1482  280.3( 443) 1.3558 23.811 2048 2.011 4120 2.252 0.53953 15.896 0.1150   2318 34.543 145.6 0.50 0.01
COMBUSTOR         0   22   15  21
50.187       63.564 2466  613.5( 770) 1.3175 23.797 2606
50.187        5.281 1310  231.8( 389) 1.3651 23.796 1933 2.261 4371 2.263 0.39937 15.896 0.1554   2370 27.127 149.1 0.50 0.00
COMBUSTOR         0   23   16  21
50.717       54.697 2461  612.4( 768) 1.3177 23.794 2603
50.717        4.287 1262  217.7( 374) 1.3677 23.794 1899 2.340 4404 2.269 0.37350 15.896 0.1662   2378 25.796 149.6 0.50 0.00
COMBUSTOR         0   24   17  21
52.127       62.479 2453  609.7( 765) 1.3180 23.794 2599
52.127        6.200 1365  249.9( 406) 1.3621 23.794 1971 2.153 4243 2.242 0.31833 15.896 0.1950   2406 20.991 151.4 0.50 0.00
COMBUSTOR         0   25   18  21
54.227       45.500 2436  604.6( 762) 1.3186 23.709 2595
54.227        2.225 1120  172.9( 331) 1.3755 23.709 1797 2.586 4648 2.293 0.26165 15.941 0.2379   2438 18.899 153.0 0.51 0.00
COMBUSTOR         0   26   19  21
54.727       45.345 2430  603.9( 760) 1.3189 23.705 2593
54.727        2.212 1114  173.1( 330) 1.3757 23.705 1794 2.588 4643 2.293 0.25095 15.941 0.2480   2441 18.109 153.1 0.51 0.00
COMBUSTOR         0   27   20  21
55.477       43.461 2427  603.0( 759) 1.3190 23.705 2591
55.477        2.057 1105  169.9( 327) 1.3763 23.705 1786 2.607 4655 2.296 0.23656 15.941 0.2631   2445 17.114 153.4 0.51 0.00
COMBUSTOR         0   28   21  21
55.760       42.737 2426  602.6( 759) 1.3190 23.705 2591
55.760        1.999 1101  168.6( 325) 1.3765 23.704 1783 2.614 4660 2.297 0.23159 15.941 0.2688   2447 16.772 153.5 0.51 0.00
COMBUSTOR         0   29   22  21
56.237       28.672 2348  602.1( 799) 1.3134 23.818 2643
56.237        1.497 1202  157.5( 355) 1.3760 23.818 1850 2.545 4717 2.305 0.18301 15.941 0.3401   2467 13.415 154.8 0.51 0.05
COMBUSTOR         0   30   23  21
57.662       36.755 2439  600.7( 763) 1.3183 23.721 2596
57.662        1.718 1107  164.4( 327) 1.3760 23.721 1787 2.615 4672 2.311 0.16921 15.941 0.3676   2477 12.286 155.4 0.51 0.01
COMBUSTOR         0   31   24  21
57.717       37.576 2423  600.6( 757) 1.3191 23.707 2589
57.717        1.680 1086  163.1( 321) 1.3773 23.707 1771 2.642 4679 2.307 0.16868 15.941 0.3690   2477 12.265 155.4 0.51 0.00
COMBUSTOR         0   32   25  21
57.857       37.623 2420  600.5( 757) 1.3192 23.705 2588
57.857        1.671 1082  162.9( 320) 1.3775 23.705 1768 2.646 4679 2.307 0.16749 15.941 0.3716   2478 12.180 155.4 0.51 0.00
COMBUSTOR         0   33   26  21
57.937       36.970 2435  600.4( 761) 1.3185 23.719 2594
57.937        1.682 1097  162.4( 324) 1.3766 23.718 1779 2.631 4682 2.310 0.16940 15.941 0.3674   2478 12.325 155.4 0.51 0.01
COMBUSTOR         0   34   27  21
58.443       37.588 2421  600.0( 757) 1.3192 23.707 2588
58.443        1.618 1073  159.5( 317) 1.3780 23.707 1761 2.666 4695 2.307 0.16855 15.941 0.3693   2479 12.298 155.5 0.51 0.00
COMBUSTOR         0   35   28  21
59.167       36.823 2417  599.5( 755) 1.3193 23.705 2586
59.167        1.525 1060  156.2( 313) 1.3787 23.705 1751 2.690 4710 2.308 0.16585 15.941 0.3753   2480 12.139 155.6 0.51 0.00
COMBUSTOR         0   36   29  21
60.187       36.693 2415  598.9( 755) 1.3194 23.705 2585
60.187        1.550 1063  157.2( 314) 1.3785 23.704 1753 2.661 4701 2.308 0.16479 15.941 0.3777   2479 12.039 155.5 0.51 0.00
COMBUSTOR         0   37   30  21
62.197       37.333 2487  598.0( 778) 1.3160 23.773 2616
62.197        2.737 1280  178.7( 380) 1.3661 23.772 1912 2.337 4470 2.316 0.17053 15.941 0.3650   2071 11.845 155.0 0.51 0.03
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READING = 0090  BLOCK = 137  TIME = 246.723  MACH  7.5  PT = 995.999  TT = 2938.8

               P      T      H           GAMMA  MOL WT SONV MACH  VEL   S      ZA      A      A/AC     NORTH  C      T.AL  PRT  ETAC
COMBUSTOR        0   38   31  21
63.617     36.777 2822  597.5( 757) 1.3190 23.715 2588
63.617      1.706 1097  163.6( 324) 1.3766 23.715 1779 2.619 4654 2.309 0.17515 15.941 0.3553   2464 12.683 154.6 0.51 0.00
COMBUSTOR        0   39   32  21
66.081     37.149 2410  596.6( 753) 1.3195 23.706 2583
66.081      2.177 1162  186.9( 344) 1.3732 23.706 1829 2.475 4528 2.307 0.16602 15.941 0.3749   2452 11.682 153.8 0.51 0.00
COMBUSTOR        0   40   33  21
66.457     34.644 2408  596.5( 752) 1.3196 23.705 2582
66.457      2.085 1169  189.7( 346) 1.3728 23.705 1835 2.459 4512 2.312 0.15434 15.941 0.4032   2451 10.822 153.7 0.51 0.00
COMBUSTOR  REGEN   41   34   4
66.457     34.644 2454  612.2( 768) 1.3181 23.705 2605
66.457      3.090 1327  238.9( 396) 1.3642 23.705 1949 2.218 4322 2.319 0.15434 15.941 0.4032   2461 10.367 154.4 0.51 0.00
NOZZLE  AE         42   35   4
88.693     34.644 2408  596.5( 752) 1.3196 23.705 2582
88.693      0.258  653   34.1( 191) 1.3967 23.705 1383 3.837 5305 2.312 0.03213 15.941 1.9371   2756  2.649 172.9 0.51 0.00
NOZZLE  PO         43   36   4
88.693     34.644 2408  596.5( 752) 1.3196 23.705 2582
88.693      0.155  565    8.1( 165) 1.3991 23.705 1287 4.216 5426 2.312 0.02280 15.941 2.7302   2797  1.922 175.4 0.51 0.00
NOZZLE  AE REGEN   44   37   4
88.693     34.644 2454  612.2( 768) 1.3161 23.705 2605
88.693      0.262  671   39.3( 196) 1.3961 23.705 1401 3.821 5354 2.319 0.03213 15.941 1.9371   2763  2.673 174.6 0.51 0.00
NOZZLE  PO REGEN   45   38   4
88.693     34.644 2454  612.2( 768) 1.3161 23.705 2605
88.693      0.155  577   11.8( 169) 1.3988 23.705 1301 4.213 5482 2.319 0.02254 15.941 2.7618   2825  1.920 177.2 0.51 0.00
FICTIVE COMBUSTR   43   56   0
66.457    346.251 4697  596.5(1532) 1.2080 26.154 3284
66.457      0.155  811 -780.4( 222) 1.3719 26.267 1451 5.720 8300 2.271 0.02690 15.941 2.3139   4204  3.470 263.7 0.51 1.00
FICTIVE NOZZLE     64   57   0
88.693     45.258 2382  587.4( 743) 1.3205 23.705 2569
88.693      0.224  574   10.8( 168) 1.3969 23.705 1297 4.141 5372 2.286 0.03213 15.941 1.9371   2773  2.682 173.9 0.51 0.00
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XABS	P-IP	P-OH	QRA	QOX	Q-IP	Q-OB	CAWALL	P-TH/PT0	P-IP/PT0	P-OH/PS0	P-OR/PT0
6.981E-01	6.650E-01	0.000	-2.761E-01	0.000	0.000	0.000	2.470E-12	3.913E 00	6.674E-10	0.000	0.000
1.036E 01	6.950E-01	0.000	-2.017E 01	0.000	0.000	0.000	1.634E 02	3.413E 00	6.674E-04	0.000	0.000
3.070E 01	1.190E 00	0.000	-4.882E 01	0.000	0.000	0.000	5.553E 02	7.050E 00	1.690E-03	0.000	0.000
3.508E 01	1.952E 00	0.000	-1.875E 02	0.000	0.000	0.000	6.804E 02	1.263E 01	1.960E-03	0.000	0.000
3.555E 01	2.160E 00	0.000	-2.062E 02	0.000	0.000	0.000	7.013E 02	1.397E 01	2.169E-03	0.000	0.000
3.606E 01	2.010E 00	0.000	-2.274E 02	-1.825E 02	-1.825E 02	0.000	7.244E 02	1.300E 01	2.018E-03	0.000	0.000
3.648E 01	2.267E 00	0.000	-2.657E 02	-1.869E 02	-1.869E 02	0.000	7.443E 02	1.467E 01	2.277E-03	0.000	0.000
3.659E 01	2.290E 00	3.164E 00	-2.858E 02	-1.862E 02	-1.862E 02	0.000	7.497E 02	1.481E 01	2.299E-03	2.047E 01	3.177E-03
3.660E 01	2.291E 00	3.184E 00	-2.839E 02	-1.882E 02	-1.882E 02	0.000	7.900E 02	1.482E 01	2.300E-03	2.059E 01	3.196E-03
3.701E 01	2.370E 00	4.491E 00	-2.856E 02	-1.928E 02	-1.928E 02	0.000	7.924E 02	1.533E 01	2.380E-03	2.905E 01	4.509E-03
3.727E 01	2.283E 00	5.312E 00	-2.846E 02	-1.957E 02	-1.957E 02	0.000	8.194E 02	1.477E 01	2.292E-03	3.436E 01	5.334E-03
3.803E 01	2.025E 00	8.697E 00	-2.647E 02	-2.049E 02	-2.049E 02	0.000	9.015E 02	1.310E 01	2.033E-03	5.728E 01	8.892E-03
3.873E 01	6.680E 00	1.209E 01	-2.606E 02	-2.676E 02	-2.152E 02	-5.244E 01	9.792E 02	4.320E 01	6.707E-03	7.822E 01	1.214E-02
3.875E 01	6.834E 00	1.203E 01	-2.608E 02	-2.691E 02	-2.156E 02	-5.355E 01	9.818E 02	4.420E 01	6.861E-03	7.779E 01	1.208E-02
3.901E 01	8.570E 00	1.127E 01	-2.651E 02	-2.863E 02	-2.202E 02	-6.615E 01	1.011E 03	5.543E 01	8.604E-03	7.291E 01	1.132E-02
3.950E 01	1.161E 01	9.653E 00	-2.815E 02	-3.200E 02	-2.302E 02	-8.982E 01	1.067E 03	7.509E 01	1.166E-02	6.373E 01	9.893E-03
3.975E 01	1.102E 01	9.137E 00	-2.897E 02	-3.377E 02	-2.360E 02	-1.017E 02	1.096E 03	7.126E 01	1.106E-02	5.910E 01	9.174E-03
4.000E 01	1.041E 01	9.272E 00	-2.946E 02	-3.563E 02	-2.424E 02	-1.139E 02	1.125E 03	6.734E 01	1.045E-02	5.997E 01	9.309E-03
4.022E 01	1.259E 01	9.387E 00	-2.993E 02	-3.726E 02	-2.483E 02	-1.243E 02	1.150E 03	8.141E 01	1.264E-02	6.071E 01	9.425E-03
4.040E 01	1.442E 01	1.168E 01	-3.041E 02	-3.865E 02	-2.534E 02	-1.331E 02	1.172E 03	9.328E 01	1.448E-02	7.551E 01	1.172E-02
4.041E 01	1.452E 01	1.180E 01	-3.042E 02	-3.873E 02	-2.537E 02	-1.336E 02	1.173E 03	9.393E 01	1.458E-02	7.632E 01	1.185E-02
4.073E 01	1.770E 01	1.576E 01	-3.097E 02	-4.117E 02	-2.630E 02	-1.487E 02	1.210E 03	1.145E 02	1.777E-02	1.019E 02	1.583E-02
4.122E 01	2.261E 01	1.962E 00	-3.395E 02	-4.503E 02	-2.785E 02	-1.718E 02	1.268E 03	1.463E 02	2.270E-02	1.269E 01	1.970E-03
4.150E 01	2.545E 01	2.032E 00	-3.717E 02	-4.731E 02	-2.882E 02	-1.849E 02	1.301E 03	1.646E 02	2.555E-02	1.314E 01	2.040E-03
4.246E 01	8.900E 00	2.269E 00	-4.360E 02	-5.524E 02	-3.228E 02	-2.295E 02	1.415E 03	5.756E 01	8.936E-03	1.467E 01	2.278E-03
4.271E 01	9.592E 00	2.331E 00	-4.426E 02	-5.730E 02	-3.320E 02	-2.410E 02	1.445E 03	6.204E 01	9.630E-03	1.508E 01	2.340E-03
4.278E 01	9.770E 00	2.347E 00	-4.443E 02	-5.781E 02	-3.344E 02	-2.438E 02	1.453E 03	6.319E 01	9.810E-03	1.518E 01	2.356E-03
4.431E 01	1.398E 01	8.957E 00	-4.703E 02	-6.868E 02	-3.837E 02	-3.031E 02	1.638E 03	9.041E 01	1.404E-02	5.793E 01	8.993E-03
4.480E 01	1.532E 01	1.107E 01	-4.764E 02	-7.175E 02	-3.974E 02	-3.202E 02	1.697E 03	9.912E 01	1.539E-02	7.159E 01	1.111E-02
4.550E 01	1.371E 01	1.407E 01	-4.799E 02	-7.601E 02	-4.156E 02	-3.445E 02	1.782E 03	8.868E 01	1.377E-02	9.103E 01	1.413E-02
4.621E 01	1.206E 01	1.273E 01	-4.692E 02	-8.027E 02	-4.336E 02	-3.690E 02	1.870E 03	7.797E 01	1.210E-02	8.236E 01	1.279E-02
4.626E 01	1.194E 01	1.264E 01	-4.681E 02	-8.055E 02	-4.348E 02	-3.706E 02	1.876E 03	7.725E 01	1.199E-02	8.178E 01	1.270E-02
4.731E 01	9.512E 00	1.068E 01	-4.421E 02	-8.650E 02	-4.600E 02	-4.050E 02	2.005E 03	6.152E 01	9.551E-03	6.905E 01	1.072E-02
4.811E 01	9.975E 00	9.176E 00	-4.182E 02	-9.089E 02	-4.782E 02	-4.307E 02	2.104E 03	6.451E 01	1.002E-02	5.934E 01	9.212E-03
5.019E 01	5.281E 00	5.281E 00	-3.438E 02	-1.004E 03	-5.215E 02	-4.826E 02	2.364E 03	3.416E 01	5.302E-03	3.416E 01	5.302E-03
5.072E 01	4.287E 00	4.287E 00	-3.306E 02	-1.022E 03	-5.317E 02	-4.905E 02	2.430E 03	2.773E 01	4.305E-03	2.773E 01	4.305E-03
5.213E 01	6.200E 00	6.200E 00	-2.918E 02	-1.065E 03	-5.570E 02	-5.078E 02	2.608E 03	4.010E 01	6.225E-03	4.010E 01	6.225E-03
5.423E 01	2.225E 00	2.225E 00	-2.454E 02	-1.118E 03	-5.898E 02	-5.287E 02	2.874E 03	1.439E 01	2.234E-03	1.439E 01	2.234E-03
5.473E 01	2.212E 00	2.212E 00	-2.397E 02	-1.129E 03	-5.968E 02	-5.325E 02	2.936E 03	1.431E 01	2.221E-03	1.431E 01	2.221E-03
5.548E 01	2.057E 00	2.057E 00	-2.314E 02	-1.145E 03	-6.067E 02	-5.378E 02	3.033E 03	1.331E 01	2.066E-03	1.331E 01	2.066E-03
5.576E 01	1.999E 00	1.999E 00	-2.285E 02	-1.150E 03	-6.103E 02	-5.397E 02	3.070E 03	1.293E 01	2.007E-03	1.293E 01	2.007E-03
5.624E 01	1.094E 00	1.900E 00	-2.064E 02	-1.159E 03	-6.159E 02	-5.428E 02	3.102E 03	7.074E 00	1.098E-03	1.229E 01	1.908E-03
5.766E 01	1.718E 00	1.718E 00	-1.935E 02	-1.181E 03	-6.302E 02	-5.510E 02	3.209E 03	1.111E 01	1.725E-03	1.111E 01	1.725E-03
5.772E 01	1.650E 00	1.711E 00	-1.930E 02	-1.182E 03	-6.307E 02	-5.512E 02	3.217E 03	1.067E 01	1.657E-03	1.106E 01	1.717E-03
5.786E 01	1.650E 00	1.693E 00	-1.919E 02	-1.184E 03	-6.320E 02	-5.520E 02	3.234E 03	1.067E 01	1.657E-03	1.095E 01	1.699E-03
5.794E 01	1.682E 00	1.682E 00	-1.912E 02	-1.185E 03	-6.327E 02	-5.524E 02	3.245E 03	1.088E 01	1.689E-03	1.088E 01	1.689E-03
5.844E 01	1.618E 00	1.618E 00	-1.875E 02	-1.192E 03	-6.369E 02	-5.548E 02	3.309E 03	1.046E 01	1.624E-03	1.046E 01	1.624E-03
5.917E 01	1.525E 00	1.525E 00	-1.832E 02	-1.200E 03	-6.423E 02	-5.580E 02	3.402E 03	9.863E 00	1.531E-03	9.863E 00	1.531E-03
6.019E 01	1.550E 00	1.550E 00	-1.796E 02	-1.210E 03	-6.487E 02	-5.616E 02	3.532E 03	1.002E 01	1.556E-03	1.002E 01	1.556E-03
6.220E 01	2.737E 00	2.737E 00	-1.791E 02	-1.224E 03	-6.576E 02	-5.664E 02	3.790E 03	1.771E 01	2.748E-03	1.771E 01	2.748E-03
6.362E 01	1.706E 00	1.706E 00	-1.791E 02	-1.232E 03	-6.617E 02	-5.704E 02	3.972E 03	1.104E 01	1.713E-03	1.104E 01	1.713E-03
6.608E 01	2.177E 00	2.177E 00	-1.791E 02	-1.246E 03	-6.659E 02	-5.801E 02	4.289E 03	1.408E 01	2.186E-03	1.408E 01	2.186E-03
6.646E 01	1.920E 00	2.249E 00	-1.791E 02	-1.248E 03	-6.662E 02	-5.819E 02	4.337E 03	1.242E 01	1.928E-03	1.455E 01	2.258E-03
6.650E 01	1.920E 00	2.257E 00	-1.791E 02	-1.248E 03	-6.662E 02	-5.821E 02	4.342E 03	1.242E 01	1.928E-03	1.460E 01	2.266E-03
6.670E 01	1.894E 00	2.295E 00	-1.791E 02	-1.250E 03	-6.664E 02	-5.832E 02	4.368E 03	1.225E 01	1.902E-03	1.484E 01	2.304E-03
6.836E 01	1.680E 00	1.455E 00	-1.587E 02	-1.259E 03	-6.690E 02	-5.900E 02	4.584E 03	1.087E 01	1.687E-03	9.410E 00	1.461E-03

XARS	P-IH	P-CH	COA	COX	H-IP	C-OH	LA-AL	P-TH/PSU	P-IH/PTO	P-CE/PSU	P-CH/PTO
6.980E 01	1.090E 00	1.240E 00	-9.202E 01	-1.267E 03	-6.727E 02	-5.900E 02	5.761E 03	7.054E 00	1.094E-03	8.031E 00	1.247E-03
7.052E 01	8.464E-01	1.135E 00	-6.099E 01	-1.271E 03	-6.748E 02	-5.963E 02	[illegible]	5.474E 00	8.998E-04	7.341E 00	1.140E-03
7.113E 01	6.400E-01	1.094E 00	-4.515E 01	-1.275E 03	-6.767E 02	-5.991E 02	[illegible]	4.135E 00	[illegible]	7.077E 00	1.099E-03
7.251E 01	5.700E-01	1.002E 00	-8.235E 00	-1.280E 03	-6.807E 02	-5.995E 02	5.069E 03	3.687E 00	5.723E-04	6.481E 00	1.006E-03
7.404E 01	8.159E-01	9.000E-01	3.04[illegible]E 01	-1.285E 03	-6.847E 02	-6.0[illegible]1E 02	5.273E 03	5.277E 00	8.192E-04	5.821E 00	9.036E-04
7.419E 01	8.400E-01	8.192E-01	3.410E 01	-1.285E 03	-6.851E 02	-6.003E 02	5.291E 03	5.433E 00	8.430E-04	5.298E 00	8.225E-04
7.494E 01	8.923E-01	4.150E-01	5.822E 01	-1.288E 03	-6.867E 02	-6.012E 02	5.375E 03	5.771E 00	8.959E-04	2.684E 00	4.167E-04
7.494E 01	8.926E-01	4.126E-01	5.904E 01	-1.286E 03	-6.967E 02	-6.012E 02	5.375E 03	5.773E 00	8.961E-04	2.670E 00	4.145E-04
7.627E 01	9.850E-01	0.000	7.887E 01	-1.292E 03	-6.891E 02	-6.030E 02	5.427E 03	6.371E 00	9.890E-04	0.000	0.000
7.912E 01	4.600E-01	0.000	1.078E 02	-1.273E 03	-6.932E 02	-5.794E 02	5.525E 03	2.975E 00	4.618E-04	0.000	0.000
8.302E 01	9.250E-01	0.000	1.374E 02	-1.277E 03	-6.970E 02	-5.797E 02	5.630E 03	5.983E 00	9.287E-04	0.000	0.000
8.583E 01	3.650E-01	0.000	1.517E 02	-1.386E 03	-7.003E 02	-6.858E 02	5.685E 03	2.361E 00	3.665E-04	0.000	0.000
8.869E 01	4.450E-01	0.000	1.615E 02	-1.392E 03	-7.065E 02	-6.858E 02	5.707E 03	2.876E 00	4.468E-04	0.000	0.000
8.869E 01	4.452E-01	0.000	1.615E 02	-1.392E 03	-7.065E 02	-6.858E 02	5.707E 03	2.879E 00	4.470E-04	0.000	0.000

ORIGINAL PAGE IS
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REACTNG = 0090 BLOCK = 137 TIME = 244.723 MACH 7.3 PT = 995.999 TT = 2930.R

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.565E 01	8.585E 01	2.170E-03	5.411E-02
4.041E 01	1.862E-01	8.604E 01	3.379E-03	3.611E-02
4.073E 01	4.205E 00	9.224E 01	2.646E-03	5.184E-02
4.122E 01	8.282E 00	1.005E 02	2.583E-03	4.235E-02
4.150E 01	4.684E 00	1.052E 02	2.882E-03	4.566E-02
4.246E 01	1.613E 01	1.213E 02	2.798E-03	2.275E-02
4.271E 01	4.331E 00	1.257E 02	2.798E-03	2.374E-02
4.278E 01	1.107E 00	1.268E 02	2.799E-03	2.398E-02
4.431E 01	2.548E 01	1.523E 02	3.104E-03	3.347E-02
4.480E 01	7.433E 00	1.597E 02	2.859E-03	3.924E-02
4.550E 01	9.828E 00	1.695E 02	2.836E-03	4.081E-02
4.621E 01	9.873E 00	1.794E 02	2.822E-03	3.769E-02
4.626E 01	6.530E-01	1.801E 02	2.820E-03	3.747E-02
4.731E 01	1.400E 01	1.940E 02	2.795E-03	3.233E-02
4.811E 01	1.014E 01	2.042E 02	2.886E-03	2.968E-02
5.019E 01	2.230E 01	2.265E 02	2.695E-03	1.901E-02
5.072E 01	4.719E 00	2.312E 02	2.670E-03	1.623E-02
5.213E 01	1.097E 01	2.422E 02	2.614E-03	2.040E-02
5.423E 01	1.387E 01	2.560E 02	2.609E-03	9.396E-03
5.473E 01	3.048E 00	2.591E 02	2.560E-03	9.364E-03
5.548E 01	4.308E 00	2.634E 02	2.545E-03	8.782E-03
5.576E 01	1.461E 00	2.650E 02	2.542E-03	8.561E-03
5.624E 01	1.222E 00	2.662E 02	2.492E-03	6.562E-03
5.766E 01	3.531E 00	2.697E 02	2.611E-03	6.881E-03
5.772E 01	2.199E-01	2.699E 02	2.475E-03	7.006E-03
5.786E 01	5.352E-01	2.705E 02	2.452E-03	7.009E-03
5.794E 01	3.154E-01	2.708E 02	2.577E-03	6.812E-03
5.844E 01	1.998E 00	2.728E 02	2.454E-03	6.793E-03
5.917E 01	2.764E 00	2.755E 02	2.431E-03	6.503E-03
6.019E 01	3.834E 00	2.794E 02	2.422E-03	6.559E-03
6.220E 01	7.469E 00	2.869E 02	2.429E-03	9.871E-03
6.362E 01	5.529E 00	2.924E 02	2.520E-03	6.849E-03
6.608E 01	9.613E 00	3.020E 02	2.472E-03	8.272E-03
6.646E 01	1.348E 00	3.033E 02	2.493E-03	7.975E-03
6.650E 01	1.239E-01	3.035E 02	2.462E-03	7.885E-03
6.670E 01	5.473E-01	3.040E 02	2.461E-03	7.697E-03
6.836E 01	4.241E 00	3.083E 02	2.399E-03	6.400E-03
6.980E 01	2.917E 00	3.112E 02	2.337E-03	5.152E-03
7.052E 01	1.252E 00	3.124E 02	2.309E-03	4.570E-03
7.113E 01	9.988E-01	3.134E 02	2.280E-03	4.143E-03
7.251E 01	1.998E 00	3.154E 02	2.257E-03	3.846E-03
7.404E 01	2.199E 00	3.176E 02	2.265E-03	4.086E-03
7.419E 01	2.089E-01	3.178E 02	2.258E-03	3.985E-03
7.494E 01	9.395E-01	3.187E 02	2.215E-03	3.343E-03
7.494E 01	1.461E-03	3.187E 02	2.219E-03	3.340E-03
7.627E 01	6.103E-01	3.193E 02	2.279E-03	4.498E-03
7.912E 01	1.043E 00	3.204E 02	2.141E-03	2.562E-03
8.302E 01	1.082E 00	3.215E 02	2.242E-03	4.242E-03
8.583E 01	5.259E-01	3.220E 02	2.079E-03	2.132E-03
8.869E 01	1.652E-01	3.222E 02	2.100E-03	2.455E-03
8.869E 01	0.000	3.222E 02	2.100E-03	2.456E-03

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RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-167.	(LBF)
MEASURED THRUST	-114.	(LBF)
CALCULATED SPECIFIC IMPULSE	-633.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-432.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.1144	
MEASURED THRUST COEFFICIENT	-.0780	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	2799.	(LBF)
NET THRUST	-141.	(LBF)
SPECIFIC IMPULSE	-532.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.0961	

MOMENTUM AND FORCES

INLET FRICTION DRAG	85.9	(LBF)
INLET MOMENTUM CHANGE	-389.9	(LBF)
COMBUSTOR FRICTION DRAG	217.5	(LBF)
COMBUSTOR STRUT DRAG	6.75	(LBF)
COMBUSTOR MOMENTUM CHANGE	-99.	(LBF)
NOZZLE FRICTION DRAG	18.81	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	322.	(LBF)
NOZZLE PRESSURE INTEGRAL	341.	(LBF)
EXTERNAL FRICTION DRAG	40.22	(LBF)
EXTERNAL PRESSURE INTEGRAL	-672.	(LBF)
TOTAL EXTERNAL DRAG	-712.	(LBF)
TOTAL STRUT DRAG	6.75	(LBF)
CAVITY FORCE	-585.	(LBF)
CALCULATED LOAD CELL FORCE	-1465.	(LBF)
MEASURED LOAD CELL FORCE	-1412.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0.	

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9909	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1927	
DELTA PT2	0.0899	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3476	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1040	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9073	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9142	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9360	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8856	
ENTHALPY AT P0 - SUPERSONIC	-41.16	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	-5.01	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0169
EQUIVALENCE RATIO	0.509
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.1001
COMBUSTOR EFFECTIVENESS	0.1458
INJECTOR DISCHARGE COEFFICIENTS	1.0494.

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	1.0059
NOZZLE COEFFICIENT - CT	0.9640
PROCESS EFFICIENCY	1.0962
KINETIC ENERGY EFFICIENCY	1.0117

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7170	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.601	(IN)
NOZZLE SHROUD TRAILING EDGE	70.941	(IN)
NOZZLE PLUG TRAILING EDGE	88.693	(IN)
STRUT LEADING EDGE	57.857	(IN)
STRUT TRAILING EDGE	66.457	(IN)
COMBUSTOR EXIT	66.457	(IN)

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	E
1B	42.702	
1C	40.300	
2A	50.177	
2C	44.250	
3A	55.467	
3B	57.652	
4	46.202	

Reading 90

t = 247.72 sec.

12/20/74


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READING = 0090  BLOCK = 158  TIME = 247.623  MACH 7.5  PT = 995.249  TT = 2938.6
                                    RAMJET PERFORMANCE

306                                 S U M M A R Y   R E P O R T

               P       T      H           GAMMA  MOLWT SONV  MACH  VEL   S      V/A      F      A/AC     ISPIN   C      TVAC  PHT  ETAC
WIND TUNNEL            1      0   5
 0.000     995.249 2939   651.0( 777) 1.2947 28.956 2556
 0.000       0.154  281   -61.6(  67) 1.3959 28.955  821 7.276 5972 1.801 0.06151 15.611 0.9909   2937  5.708 188.1
SPIKE TIP NS           2      0   7
 0.600      11.425 2939   651.0( 777) 1.2946 28.955 2556
 0.600      10.539 2885   634.9( 761) 1.2963 28.955 2534 0.355  699 2.100 0.06151 15.611 0.9909   3111  0.659 199.3
WIND TUNNEL            3      0   0
 0.000     995.249 2939   651.0( 777) 1.2947 28.956 2556
 0.000       0.170  289   -59.7(  69) 1.3952 28.955  832 7.165 5964 1.801 0.06590 16.726 0.9909   3143  6.107 187.9
SPIKE TIP NS           4      0   0
 0.600      11.425 2939   651.0( 777) 1.2946 28.955 2556
 0.600      10.392 2874   632.1( 758) 1.2964 28.955 2530 0.385  973 2.108 0.06590 16.726 0.9909   3143  1.997 187.9
INLET THROAT           5      0   3
40.400     204.971 2833   619.4( 746) 1.2981 28.955 2513
40.400      13.659 1461   231.8( 361) 1.3502 28.955 1840 2.393 4404 1.899 0.77161 15.611 0.0790   2413 52.610 154.6
INLET UPNRSK           6      0   3
40.400     204.971 2833   619.4( 746) 1.2981 28.955 2513
40.400      11.700 1403   210.5( 345) 1.3535 28.955 1806 2.486 4490 1.899 0.70147 15.611 0.0869   2439 48.942 156.2
INLET DNNRSK           7      0   4
40.400      96.966 2833   619.4( 746) 1.2961 28.955 2513
40.400      82.607 2730   588.8( 716) 1.3014 28.955 2470 0.501 1237 1.950 0.70147 15.611 0.0869   2439 13.489 156.2
COMBUSTOR         0    8      1  21
40.410     110.792 2744   651.3( 874) 1.3064 23.653 2745
40.410      15.338 1688   289.1( 513) 1.3446 23.653 2184
                                                                 1.949 4258 2.273 0.78523 15.869 0.0790   2413 51.956 151.9 0.54 0.07
COMBUSTOR         0    9      2  21
40.727     128.920 2573   649.7( 816) 1.3141 23.501 2675
40.727      16.942 1549   302.2( 470) 1.3528 23.501 2106 1.981 4170 2.241 0.78808 15.889 0.0787   2401 51.673 151.1 0.54 0.01
COMBUSTOR         0   10      3  21
41.217     110.007 2541   647.1( 804) 1.3155 23.479 2660
41.217      11.545 1440   275.6( 435) 1.3586 23.479 2035 2.118 4312 2.250 0.78224 15.889 0.0793   2364 52.413 146.8 0.54 0.00
COMBUSTOR         0   11      4  21
41.500     102.675 2533   645.5( 803) 1.3159 23.475 2457
41.500      12.400 1489   292.6( 451) 1.3561 23.475 2068 2.032 4202 2.255 0.77439 15.889 0.0801   2330 50.575 146.6 0.54 0.00
COMBUSTOR         0   12      5  21
42.460      65.750 2517   640.2( 797) 1.3163 23.475 2649
42.460       7.787 1471   287.1( 445) 1.3570 23.475 2056 2.044 4203 2.291 0.73055 15.889 0.0849   2245 47.723 141.3 0.54 0.00
COMBUSTOR         0   13      6  21
42.712      33.876 3418   638.8(1102) 1.2722 24.346 2980
42.712       7.941 2467   292.7( 765) 1.3066 24.351 2565 1.622 4161 2.425 0.72166 15.889 0.0840   2230 46.669 140.3 0.54 0.35
COMBUSTOR         0   14      7  21
42.777      55.250 2651   630.4( 842) 1.3101 23.601 2705
42.777       7.981 1642   294.2( 499) 1.3472 23.601 2159 1.925 4151 2.321 0.71988 15.889 0.0862   2226 46.434 140.1 0.54 0.05
COMBUSTOR         0   15      8  21
44.310      62.188 2513   631.4( 796) 1.3162 23.493 2646
44.310      12.117 1672   345.2( 510) 1.3471 23.493 2183 1.733 3784 2.295 0.66576 15.889 0.0932   2158 39.151 135.8 0.54 0.01
COMBUSTOR         0   16      9  21
44.600      63.076 2490   629.5( 788) 1.3172 23.478 2635
44.800      13.438 1694   358.6( 518) 1.3463 23.477 2198 1.676 3682 2.290 0.65709 15.889 0.0944   2143 37.600 134.9 0.54 0.00
COMBUSTOR         0   17     10  21
45.497      62.441 2480   626.9( 784) 1.3174 23.475 2631
45.497      14.092 1712   365.3( 524) 1.3456 23.475 2209 1.638 3616 2.290 0.65252 15.889 0.0951   2130 36.686 134.0 0.54 0.00
COMBUSTOR         0   18     11  21
46.212      59.486 2472   624.4( 782) 1.3179 23.475 2627
46.212      12.531 1676   353.7( 512) 1.3471 23.475 2187 1.683 3680 2.293 0.63494 15.869 0.0977   2131 36.309 134.1 0.54 0.00
```

READING = 0000 BLOCK = 138 TIME = 207.423 MACH 7.3 PT = 995.249 TT = 2958.6

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	[illegible]	A/AC	PLPTR	Q	TVAC	PHT	ETAC
COMBUSTOR	0	19	12 21														
46.260	45.939	2894	624.2(923)	1.2963	23.667	2798											
46.260	12.427	2121	352.9(655)	1.3250	23.867	2020	1.523	3684	2.358	0.63301	15.889	0.0980	2131	36.241	134.1	0.54	0.16
COMBUSTOR	0	20	13 21														
47.310	51.603	2526	620.9(799)	1.3152	23.532	2649											
47.310	10.134	1685	334.6(514)	1.3461	23.532	2189	1.729	3785	2.311	0.58664	15.869	0.1097	2143	34.504	134.9	0.54	0.02
COMBUSTOR	0	21	14 21														
48.110	53.498	2465	618.6(779)	1.3179	23.483	2623											
48.110	10.500	1641	338.9(500)	1.3486	23.483	2164	1.728	3740	2.301	0.53927	15.889	0.1150	2157	31.347	135.7	0.54	0.00
COMBUSTOR	0	22	15 21														
50.187	40.691	2441	613.1(771)	1.3189	23.476	2611											
50.187	5.556	1477	288.5(447)	1.3967	23.476	2060	1.956	4030	2.320	0.39917	15.889	0.1554	2211	24.998	139.2	0.54	0.00
COMBUSTOR	0	23	16 21														
50.717	37.039	2437	611.9(769)	1.3190	23.475	2609											
50.717	4.575	1435	275.6(434)	1.3588	23.475	2033	2.018	4102	2.328	0.37333	15.889	0.1662	2220	23.798	139.7	0.54	0.00
COMBUSTOR	0	24	17 21														
52.127	40.488	2428	608.9(766)	1.3193	23.475	2605											
52.127	6.200	1513	300.7(459)	1.3549	23.474	2084	1.885	3927	2.319	0.31818	15.889	0.1950	2249	19.419	141.6	0.54	0.00
COMBUSTOR	0	25	18 21														
54.227	26.867	2410	603.3(763)	1.3199	23.393	2600											
54.227	2.375	1298	231.1(391)	1.3462	23.393	1941	2.223	4316	2.358	0.26154	15.935	0.2379	2282	17.540	143.2	0.55	0.00
COMBUSTOR	0	26	19 21														
54.727	25.727	2404	602.5(761)	1.3202	23.390	2597											
54.727	2.200	1282	227.6(387)	1.3670	23.390	1930	2.244	4331	2.361	0.25085	15.935	0.2480	2285	16.884	143.4	0.55	0.00
COMBUSTOR	0	27	20 21														
55.477	24.527	2401	601.4(759)	1.3203	23.389	2596											
55.477	2.051	1273	224.7(383)	1.3675	23.389	1923	2.257	4342	2.364	0.23646	15.935	0.2631	2288	15.955	143.6	0.55	0.00
COMBUSTOR	0	28	21 21														
55.760	10.129	3387	601.0(1094)	1.2699	24.335	2965											
55.760	1.995	2349	223.5(726)	1.3098	24.343	2507	1.734	4346	2.524	0.23149	15.935	0.2686	2290	15.635	143.7	0.55	0.38
COMBUSTOR	0	29	22 21														
56.237	16.548	2550	600.4(809)	1.3134	23.526	2660											
56.237	1.550	1405	214.3(424)	1.3591	23.526	2009	2.188	4396	2.415	0.18293	15.935	0.3401	2312	12.496	145.1	0.55	0.06
COMBUSTOR	0	30	23 21														
57.662	20.673	2416	598.9(764)	1.3195	23.410	2602											
57.662	1.718	1280	219.2(386)	1.3669	23.409	1928	2.261	4359	2.381	0.16914	15.935	0.3678	2321	11.457	145.6	0.55	0.01
COMBUSTOR	0	31	24 21														
57.717	21.858	2397	598.9(758)	1.3204	23.392	2593											
57.717	1.830	1271	223.0(383)	1.3676	23.392	1922	2.257	4337	2.374	0.16860	15.935	0.3690	2321	11.363	145.6	0.55	0.00
COMBUSTOR	0	32	25 21														
57.857	21.864	2393	598.7(757)	1.3206	23.390	2592											
57.857	1.821	1267	222.8(382)	1.3678	23.390	1919	2.260	4337	2.373	0.16742	15.935	0.3716	2321	11.285	145.7	0.55	0.00
COMBUSTOR	0	33	26 21														
57.937	20.375	2422	598.7(767)	1.3192	23.416	2605											
57.937	1.682	1282	217.4(386)	1.3668	23.416	1929	2.265	4368	2.383	0.16933	15.935	0.3674	2322	11.494	145.7	0.55	0.01
COMBUSTOR	0	34	27 21														
58.443	20.802	2396	598.2(758)	1.3204	23.393	2593											
58.443	1.618	1245	214.6(375)	1.3690	23.393	1903	2.302	4381	2.378	0.16848	15.935	0.3693	2323	11.472	145.8	0.55	0.00
COMBUSTOR	0	35	28 21														
59.167	20.260	2390	597.7(756)	1.3207	23.390	2590											
59.167	1.525	1231	211.5(370)	1.3698	23.390	1893	2.322	4396	2.379	0.16578	15.935	0.3753	2324	11.325	145.8	0.55	0.00
COMBUSTOR	0	36	29 21														
60.187	20.683	2389	596.9(755)	1.3208	23.389	2589											
60.187	1.600	1239	214.1(373)	1.3694	23.389	1899	2.305	4377	2.377	0.16472	15.935	0.3777	2323	11.205	145.8	0.55	0.00
COMBUSTOR	0	37	30 21														
62.197	26.587	2384	595.6(754)	1.3209	23.389	2587											
62.197	3.637	1440	270.1(437)	1.3587	23.389	2039	1.955	3986	2.355	0.17045	15.935	0.3650	2314	10.599	145.2	0.55	0.00

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READING = 0030  BLOCK = 138  TIME = 247.423  MACH  7.5  PI = 995.249  TT = 2938.6                     PAGE  3

                  P      T       H           GAMMA  MOLWT  SONV  MACH   VEL    S      W/A      A     A/AT    MDOT     F     IVAL  PHI  ETAC
COMBUSTOR            0   36   31   21
63.617       19.243 2497   594.7( 791) 1.3157 23.393 2637
63.617        1.925 1397   224.3( 422) 1.3549 23.493 2005 2.148 4306 2.390 0.17507 15.935 0.3553   2308 11.715 104.6 1.55 0.04
COMBUSTOR            0   39   32   21
66.081       21.745 2395   593.4( 757) 1.3203 23.405 2592
66.081        2.221 1339   240.0( 404) 1.3638 23.405 1970 2.135 4205 2.374 0.16595 15.935 0.3749   2296 10.845 144.1 0.55 0.01
COMBUSTOR            0   40   33   21
66.457       22.191 2380   593.2( 752) 1.3210 23.392 2585
66.457        2.683 1391   261.7( 421) 1.3612 23.391 2006 2.030 4073 2.370 0.15420 15.935 0.4032   2294  9.765 144.0 0.55 0.00
COMBUSTOR  REGEN    41   34    4
66.457       22.191 2429   610.6( 769) 1.3193 23.392 2610
66.457        4.506 1630   339.0( 499) 1.3493 23.391 2162 1.705 3686 2.377 0.15426 15.935 0.4032   2291  8.639 143.6 0.55 0.00
NOZZLE  AE          42   35    4
88.693       22.151 2380   593.2( 752) 1.3210 23.392 2585
88.693        0.323  778    71.4( 231) 1.3922 23.391 1517 3.368 5110 2.370 0.03212 15.935 1.9372   2491  2.550 168.9 0.55 0.00
NOZZLE  PO          43   36    4
88.693       22.151 2380   593.2( 752) 1.3210 23.392 2585
88.693        0.154  631    27.4( 187) 1.3974 23.391 1369 3.886 5321 2.370 0.01971 15.935 3.1567   2760  1.630 173.2 0.55 0.00
NOZZLE  AE REGEN    44   37    4
88.693       22.151 2429   610.6( 769) 1.3193 23.392 2610
88.693        0.329  801    78.4( 238) 1.3912 23.391 1539 3.353 5161 2.377 0.03211 15.935 1.9372   2719  2.576 170.7 0.55 0.00
NOZZLE  PO REGEN    45   38    4
88.693       22.151 2429   610.6( 769) 1.3193 23.392 2610
88.693        0.154  647    32.0( 192) 1.3969 23.391 1386 3.883 5381 2.377 0.01945 15.935 3.1980   2791  1.627 175.2 0.55 0.00
FICTIVE COMBUSTR    63   56    0
66.457      204.971 4769   593.2(1977) 1.1989 25.926 3311
66.457        0.154  972  -797.5( 270) 1.3619 26.086 1589 5.251 8342 2.337 0.02237 15.935 2.7808   4242  2.900 266.2 0.55 1.00
FICTIVE NOZZLE      64   57    0
88.693       15.025 2387   595.6( 755) 1.3208 23.392 2589
88.693        0.400  924   115.7( 275) 1.3857 23.391 1650 2.971 4901 2.404 0.03212 15.935 1.9371   2626  2.446 164.8 0.55 0.00
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READING = 0090 BLOCK = 138 TIME = 207.623 MACH 7.3 PT = 995.249 TT = 2938.4 PAGE 4

XABS	P-IP	P-OH	PRA	QOX	Q-IP	Q-CH	CA-ALL	P-IB/P80	P-IP/PT0	P-OB/P80	P-OB/PT0
6.981E-01	6.050E-01	0.000	-2.758E-01	0.000	0.000	0.000	2.370E-02	3.916E 00	6.079E-04	0.000	0.000
1.836E 01	6.050E-01	0.000	-2.017E 01	0.000	0.000	0.000	1.434E 02	3.916E 00	6.079E-04	0.000	0.000
3.070E 01	1.240E 00	0.000	-9.496E 01	0.000	0.000	0.000	5.053E 02	8.027E 00	1.246E-03	0.000	0.000
3.508E 01	2.663E 00	0.000	-2.214E 02	0.000	0.000	0.000	6.804E 02	1.724E 01	2.676E-03	0.000	0.000
3.555E 01	2.985E 00	0.000	-2.472E 02	0.000	0.000	0.000	7.013E 02	1.932E 01	2.999E-03	0.000	0.000
3.606E 01	3.030E 00	0.000	-2.777E 02	-2.579E 02	-2.579E 02	0.000	7.246E 02	1.961E 01	3.044E-03	0.000	0.000
3.648E 01	3.404E 00	0.000	-3.052E 02	-2.642E 02	-2.642E 02	0.000	7.443E 02	2.203E 01	3.420E-03	0.000	0.000
3.659E 01	3.362E 00	3.150E 00	-3.060E 02	-2.659E 02	-2.659E 02	0.000	7.497E 02	2.176E 01	3.378E-03	2.039E 01	3.165E-03
3.660E 01	3.360E 00	3.182E 00	-3.062E 02	-2.660E 02	-2.660E 02	0.000	7.500E 02	2.175E 01	3.376E-03	2.060E 01	3.197E-03
3.701E 01	3.210E 00	5.396E 00	-3.539E 02	-2.724E 02	-2.724E 02	0.000	7.924E 02	2.078E 01	3.225E-03	3.493E 01	5.422E-03
3.727E 01	3.570E 00	6.787E 00	-3.554E 02	-2.766E 02	-2.766E 02	0.000	8.194E 02	2.311E 01	3.587E-03	4.394E 01	6.820E-03
3.803E 01	4.640E 00	9.636E 00	-3.578E 02	-2.896E 02	-2.896E 02	0.000	9.015E 02	3.004E 01	4.662E-03	6.238E 01	9.682E-03
3.873E 01	8.367E 00	1.224E 01	-3.751E 02	-3.625E 02	-3.028E 02	-5.964E 01	9.792E 02	5.416E 01	8.407E-03	7.922E 01	1.230E-02
3.875E 01	8.490E 00	1.223E 01	-3.758E 02	-3.642E 02	-3.033E 02	-6.091E 01	9.818E 02	5.496E 01	8.530E-03	7.917E 01	1.229E-02
3.901E 01	9.860E 00	1.214E 01	-3.836E 02	-3.840E 02	-3.087E 02	-7.524E 01	1.011E 03	6.396E 01	9.927E-03	7.860E 01	1.220E-02
3.950E 01	1.300E 01	1.198E 01	-4.019E 02	-4.220E 02	-3.198E 02	-1.022E 02	1.067E 03	8.414E 01	1.306E-02	7.753E 01	1.203E-02
3.975E 01	1.352E 01	1.189E 01	-4.104E 02	-4.415E 02	-3.258E 02	-1.157E 02	1.096E 03	8.753E 01	1.359E-02	7.699E 01	1.195E-02
4.000E 01	1.406E 01	1.270E 01	-4.160E 02	-4.618E 02	-3.323E 02	-1.295E 02	1.125E 03	9.101E 01	1.413E-02	8.224E 01	1.277E-02
4.022E 01	1.532E 01	1.340E 01	-4.205E 02	-4.795E 02	-3.381E 02	-1.414E 02	1.150E 03	9.918E 01	1.540E-02	8.674E 01	1.346E-02
4.040E 01	1.639E 01	1.419E 01	-4.246E 02	-4.945E 02	-3.432E 02	-1.514E 02	1.172E 03	1.061E 02	1.647E-02	9.184E 01	1.425E-02
4.041E 01	1.644E 01	1.423E 01	-4.247E 02	-4.953E 02	-3.434E 02	-1.519E 02	1.173E 03	1.065E 02	1.652E-02	9.212E 01	1.430E-02
4.073E 01	1.829E 01	1.559E 01	-4.306E 02	-5.218E 02	-3.527E 02	-1.691E 02	1.210E 03	1.184E 02	1.838E-02	1.009E 02	1.567E-02
4.122E 01	2.114E 01	1.950E 00	-4.594E 02	-5.634E 02	-3.680E 02	-1.954E 02	1.268E 03	1.369E 02	2.124E-02	1.262E 01	1.959E-03
4.150E 01	2.279E 01	2.012E 00	-4.885E 02	-5.879E 02	-3.776E 02	-2.103E 02	1.301E 03	1.475E 02	2.290E-02	1.303E 01	2.022E-03
4.246E 01	1.335E 01	2.224E 00	-5.569E 02	-6.730E 02	-4.119E 02	-2.611E 02	1.415E 03	8.642E 01	1.341E-02	1.440E 01	2.235E-03
4.271E 01	1.360E 01	2.279E 00	-5.680E 02	-6.950E 02	-4.208E 02	-2.742E 02	1.445E 03	8.806E 01	1.367E-02	1.476E 01	2.290E-03
4.278E 01	1.367E 01	2.294E 00	-5.708E 02	-7.004E 02	-4.231E 02	-2.774E 02	1.453E 03	8.848E 01	1.373E-02	1.485E 01	2.305E-03
4.431E 01	1.921E 01	9.025E 00	-6.116E 02	-8.123E 02	-4.688E 02	-3.435E 02	1.638E 03	9.845E 01	1.528E-02	5.842E 01	9.068E-03
4.480E 01	1.570E 01	1.118E 01	-6.190E 02	-8.425E 02	-4.806E 02	-3.619E 02	1.697E 03	1.016E 02	1.577E-02	7.235E 01	1.123E-02
4.550E 01	1.395E 01	1.424E 01	-6.230E 02	-8.643E 02	-4.961E 02	-3.682E 02	1.762E 03	9.028E 01	1.401E-02	9.216E 01	1.431E-02
4.621E 01	1.215E 01	1.291E 01	-6.122E 02	-9.248E 02	-5.116E 02	-4.132E 02	1.870E 03	7.864E 01	1.221E-02	8.360E 01	1.298E-02
4.626E 01	1.203E 01	1.283E 01	-6.110E 02	-9.274E 02	-5.126E 02	-4.148E 02	1.876E 03	7.786E 01	1.209E-02	8.302E 01	1.289E-02
4.731E 01	9.387E 00	1.088E 01	-5.841E 02	-9.799E 02	-5.344E 02	-4.455E 02	2.005E 03	6.077E 01	9.432E-03	7.044E 01	1.093E-02
4.811E 01	1.160E 01	9.401E 00	-5.605E 02	-1.017E 03	-5.504E 02	-4.648E 02	2.104E 03	7.509E 01	1.166E-02	6.085E 01	9.446E-03
5.019E 01	5.556E 00	5.596E 00	-4.838E 02	-1.104E 03	-5.898E 02	-5.144E 02	2.364E 03	3.597E 01	5.583E-03	3.597E 01	5.583E-03
5.072E 01	4.575E 00	4.575E 00	-4.699E 02	-1.122E 03	-5.986E 02	-5.239E 02	2.430E 03	2.962E 01	4.597E-03	2.962E 01	4.597E-03
5.213E 01	6.200E 00	6.200E 00	-4.300E 02	-1.170E 03	-6.227E 02	-5.478E 02	2.608E 03	4.013E 01	6.230E-03	4.013E 01	6.230E-03
5.423E 01	2.375E 00	2.375E 00	-3.828E 02	-1.232E 03	-6.542E 02	-5.774E 02	2.874E 03	1.537E 01	2.386E-03	1.537E 01	2.386E-03
5.473E 01	2.200E 00	2.200E 00	-3.769E 02	-1.244E 03	-6.613E 02	-5.826E 02	2.938E 03	1.424E 01	2.210E-03	1.424E 01	2.210E-03
5.548E 01	2.051E 00	2.051E 00	-3.666E 02	-1.261E 03	-6.714E 02	-5.898E 02	3.033E 03	1.328E 01	2.061E-03	1.328E 01	2.061E-03
5.576E 01	1.995E 00	1.995E 00	-3.657E 02	-1.268E 03	-6.751E 02	-5.924E 02	3.070E 03	1.291E 01	2.004E-03	1.291E 01	2.004E-03
5.624E 01	1.200E 00	1.900E 00	-3.419E 02	-1.277E 03	-6.806E 02	-5.964E 02	3.102E 03	7.768E 00	1.206E-03	1.230E 01	1.909E-03
5.766E 01	1.718E 00	1.718E 00	-3.291E 02	-1.301E 03	-6.938E 02	-6.049E 02	3.209E 03	1.112E 01	1.726E-03	1.112E 01	1.726E-03
5.772E 01	1.950E 00	1.711E 00	-3.286E 02	-1.302E 03	-6.943E 02	-6.072E 02	3.217E 03	1.262E 01	1.959E-03	1.107E 01	1.719E-03
5.786E 01	1.950E 00	1.693E 00	-3.275E 02	-1.304E 03	-6.955E 02	-6.081E 02	3.234E 03	1.262E 01	1.959E-03	1.096E 01	1.701E-03
5.794E 01	1.682E 00	1.682E 00	-3.268E 02	-1.305E 03	-6.961E 02	-6.086E 02	3.245E 03	1.089E 01	1.690E-03	1.089E 01	1.690E-03
5.844E 01	1.618E 00	1.618E 00	-3.230E 02	-1.312E 03	-7.002E 02	-6.115E 02	3.309E 03	1.047E 01	1.625E-03	1.047E 01	1.625E-03
5.917E 01	1.525E 00	1.525E 00	-3.188E 02	-1.321E 03	-7.055E 02	-6.153E 02	3.402E 03	9.872E 00	1.532E-03	9.872E 00	1.532E-03
6.019E 01	1.600E 00	1.600E 00	-3.151E 02	-1.333E 03	-7.121E 02	-6.205E 02	3.532E 03	1.036E 01	1.608E-03	1.036E 01	1.608E-03
6.220E 01	3.637E 00	3.637E 00	-3.145E 02	-1.354E 03	-7.221E 02	-6.316E 02	3.790E 03	2.355E 01	3.655E-03	2.355E 01	3.655E-03
6.362E 01	1.925E 00	1.925E 00	-3.145E 02	-1.367E 03	-7.274E 02	-6.400E 02	3.972E 03	1.246E 01	1.934E-03	1.246E 01	1.934E-03
6.608E 01	2.221E 00	2.221E 00	-3.145E 02	-1.389E 03	-7.341E 02	-6.547E 02	4.289E 03	1.438E 01	2.232E-03	1.438E 01	2.232E-03
6.646E 01	3.100E 00	2.266E 00	-3.145E 02	-1.392E 03	-7.348E 02	-6.571E 02	4.337E 03	2.007E 01	3.115E-03	1.467E 01	2.277E-03
6.650E 01	3.100E 00	2.271E 00	-3.145E 02	-1.392E 03	-7.349E 02	-6.574E 02	4.342E 03	2.007E 01	3.115E-03	1.470E 01	2.282E-03
6.670E 01	2.981E 00	2.295E 00	-3.145E 02	-1.394E 03	-7.353E 02	-6.587E 02	4.368E 03	1.930E 01	2.995E-03	1.486E 01	2.306E-03
6.836E 01	1.999E 00	1.460E 00	-2.910E 02	-1.406E 03	-7.395E 02	-6.665E 02	4.584E 03	1.291E 01	2.005E-03	9.451E 00	1.467E-03

XABS	P-IP	P-OP	DPA	DDX	Q-IP	Q-OP	C**ALL	P-IP/PSO	P-IP/PTO	P-OP/PSO	P-CP/PTO
6.980E 01	1.120E 00	1.283E 00	-2.206E 02	-1.414E 03	-7.445E 02	-6.696E 02	4.761E 03	7.250E 00	1.125E-03	8.049E 00	1.249E-03
7.052E 01	8.980E-01	1.135E 00	-1.921E 02	-1.418E 03	-7.472E 02	-6.710E 02	4.849E 03	5.813E 00	9.023E-04	7.347E 00	1.140E-03
7.113E 01	7.100E-01	1.098E 00	-1.715E 02	-1.421E 03	-7.494E 02	-6.717E 02	4.923E 03	4.596E 00	7.134E-04	7.106E 00	1.103E-03
7.251E 01	6.050E-01	1.013E 00	-1.331E 02	-1.425E 03	-7.542E 02	-6.716E 02	5.089E 03	3.916E 00	6.079E-04	6.560E 00	1.018E-03
7.404E 01	8.008E-01	9.200E-01	-9.381E 01	-1.442E 03	-7.588E 02	-6.731E 02	5.273E 03	5.184E 00	8.046E-04	5.955E 00	9.244E-04
7.419E 01	8.200E-01	8.342E-01	-9.013E 01	-1.433E 03	-7.592E 02	-6.735E 02	5.291E 03	5.308E 00	8.239E-04	5.400E 00	8.381E-04
7.494E 01	8.723E-01	4.050E-01	-6.621E 01	-1.437E 03	-7.610E 02	-6.761E 02	5.375E 03	5.647E 00	8.764E-04	2.622E 00	4.069E-04
7.494E 01	8.726E-01	4.027E-01	-6.541E 01	-1.437E 03	-7.610E 02	-6.762E 02	5.375E 03	5.648E 00	8.767E-04	2.607E 00	4.046E-04
7.627E 01	9.650E-01	0.000	-4.600E 01	-1.445E 03	-7.637E 02	-6.816E 02	5.427E 03	6.247E 00	9.696E-04	0.000	0.000
7.912E 01	4.300E-01	0.000	-1.811E 01	-1.482E 03	-7.682E 02	-7.133E 02	5.525E 03	2.784E 00	4.321E-04	0.000	0.000
8.302E 01	9.150E-01	0.000	1.064E 01	-1.485E 03	-7.722E 02	-7.129E 02	5.630E 03	5.923E 00	9.194E-04	0.000	0.000
8.563E 01	3.550E-01	0.000	2.474E 01	-1.345E 03	-7.755E 02	-5.697E 02	5.685E 03	2.298E 00	3.567E-04	0.000	0.000
8.869E 01	4.250E-01	0.000	3.416E 01	-1.351E 03	-7.817E 02	-5.697E 02	5.707E 03	2.751E 00	4.270E-04	0.000	0.000
8.869E 01	4.251E-01	0.000	3.416E 01	-1.352E 03	-7.818E 02	-5.697E 02	5.707E 03	2.752E 00	4.272E-04	0.000	0.000

READING = CURU BLOCK = 138 TIME = 247.625 MACH 7.5 PT = 995.240 TT = 2034.6

X	DDRAG	CDRAG	CF	HC
4.040E 01	9.924E 01	9.924E 01	2.469E-03	4.003E-02
4.041E 01	1.949E-01	9.943E 01	3.548E-03	3.700E-02
4.073E 01	6.123E 00	1.056E 02	2.859E-03	4.935E-02
4.122E 01	8.391E 00	1.139E 02	2.772E-03	3.886E-02
4.150E 01	4.788E 00	1.187E 02	2.794E-03	4.039E-02
4.246E 01	1.619E 01	1.349E 02	2.982E-03	2.755E-02
4.271E 01	4.247E 00	1.392E 02	2.999E-03	2.769E-02
4.278E 01	1.223E 00	1.404E 02	3.742E-03	2.278E-02
4.431E 01	2.723E 01	1.676E 02	3.144E-03	3.413E-02
4.490E 01	7.075E 00	1.747E 02	3.059E-03	3.725E-02
4.550E 01	9.661E 00	1.844E 02	3.056E-03	3.832E-02
4.621E 01	9.770E 00	1.941E 02	3.055E-03	3.532E-02
4.626E 01	6.485E-01	1.948E 02	3.054E-03	3.511E-02
4.731E 01	1.473E 01	2.095E 02	3.375E-03	2.731E-02
4.811E 01	1.051E 01	2.200E 02	3.066E-03	2.986E-02
5.019E 01	2.199E 01	2.420E 02	2.959E-03	1.844E-02
5.072E 01	4.793E 00	2.468E 02	2.951E-03	1.580E-02
5.213E 01	1.115E 01	2.579E 02	2.863E-03	1.902E-02
5.423E 01	1.422E 01	2.722E 02	2.918E-03	9.222E-03
5.473E 01	3.184E 00	2.754E 02	2.887E-03	8.709E-03
5.546E 01	4.533E 00	2.799E 02	2.879E-03	8.180E-03
5.576E 01	1.645E 00	2.815E 02	2.873E-03	7.980E-03
5.624E 01	1.502E 00	2.830E 02	3.766E-03	4.970E-03
5.766E 01	4.329E 00	2.874E 02	2.947E-03	6.397E-03
5.772E 01	2.305E-01	2.876E 02	2.788E-03	6.957E-03
5.786E 01	5.612E-01	2.882E 02	2.788E-03	6.957E-03
5.794E 01	3.370E-01	2.885E 02	2.992E-03	6.211E-03
5.844E 01	2.143E 00	2.906E 02	2.795E-03	6.313E-03
5.917E 01	2.934E 00	2.936E 02	2.763E-03	6.062E-03
6.019E 01	4.054E 00	2.976E 02	2.743E-03	6.262E-03
6.220E 01	7.652E 00	3.053E 02	2.710E-03	1.115E-02
6.362E 01	5.507E 00	3.108E 02	2.718E-03	7.166E-03
6.608E 01	9.952E 00	3.207E 02	2.863E-03	7.604E-03
6.646E 01	1.404E 00	3.221E 02	2.786E-03	8.838E-03
6.650E 01	1.227E-01	3.223E 02	2.743E-03	8.765E-03
6.670E 01	5.276E-01	3.226E 02	2.738E-03	8.676E-03
6.836E 01	3.992E 00	3.268E 02	2.647E-03	6.494E-03
6.980E 01	2.650E 00	3.294E 02	2.557E-03	4.966E-03
7.052E 01	1.127E 00	3.306E 02	2.535E-03	4.456E-03
7.113E 01	8.761E-01	3.314E 02	2.512E-03	4.094E-03
7.251E 01	1.836E 00	3.333E 02	2.485E-03	3.771E-03
7.404E 01	1.997E 00	3.353E 02	2.487E-03	3.926E-03
7.419E 01	1.877E-01	3.355E 02	2.479E-03	3.815E-03
7.494E 01	8.411E-01	3.363E 02	2.430E-03	3.163E-03
7.494E 01	1.483E-03	3.363E 02	2.430E-03	3.160E-03
7.627E 01	5.414E-01	3.368E 02	2.497E-03	4.241E-03
7.912E 01	9.175E-01	3.378E 02	2.344E-03	2.356E-03
8.302E 01	9.567E-01	3.387E 02	2.459E-03	4.032E-03
8.583E 01	4.706E-01	3.392E 02	2.284E-03	2.023E-03
8.869E 01	1.480E-01	3.393E 02	2.303E-03	2.294E-03
8.869E 01	0.000	3.393E 02	2.303E-03	2.294E-03

ORIGINAL PAGE IS
OF POOR QUALITY

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-311.	(LBF)
MEASURED THRUST	-580.	(LBF)
CALCULATED SPECIFIC IMPULSE	-1096.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-2041.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.2129	
MEASURED THRUST COEFFICIENT	-.3966	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	2653.	(LBF)
NET THRUST	-284.	(LBF)
SPECIFIC IMPULSE	-999.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.1941	

MOMENTUM AND FORCES

INLET FRICTION DRAG	99.2	(LBF)
INLET MOMENTUM CHANGE	-523.8	(LBF)
COMBUSTOR FRICTION DRAG	222.9	(LBF)
COMBUSTOR STRUT DRAG	6.04	(LBF)
COMBUSTOR MOMENTUM CHANGE	-119.	(LBF)
NOZZLE FRICTION DRAG	17.19	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	332.	(LBF)
NOZZLE PRESSURE INTEGRAL	349.	(LBF)
EXTERNAL FRICTION DRAG	37.46	(LBF)
EXTERNAL PRESSURE INTEGRAL	-658.	(LBF)
TOTAL EXTERNAL DRAG	-696.	(LBF)
TOTAL STRUT DRAG	6.04	(LBF)
CAVITY FORCE	-562.	(LBF)
CALCULATED LOAD CELL FORCE	-1569.	(LBF)
MEASURED LOAD CELL FORCE	-1837.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7170	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.601	(IN)
NOZZLE SHROUD TRAILING EDGE	74.941	(IN)
NOZZLE PLUG TRAILING EDGE	68.693	(IN)
STRUT LEADING EDGE	57.857	(IN)
STRUT TRAILING EDGE	66.457	(IN)
COMBUSTOR EXIT	66.457	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9909	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0960	
DELTA PT2	0.0977	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.2059	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.0978	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8850	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9111	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9082	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8744	
ENTHALPY AT P0 - SUPERSONIC	-27.65	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	-3.75	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0181
EQUIVALENCE RATIO	0.548
COMBUSTOR EFFICIENCY	0.001
TOTAL PRESSURE RATIO	0.1081
COMBUSTOR EFFECTIVENESS	0.1971
INJECTOR DISCHARGE COEFFICIENTS	0.9707

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9757
NOZZLE COEFFICIENT - CT	0.9235
PROCESS EFFICIENCY	0.8306
KINETIC ENERGY EFFICIENCY	0.9463

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	F
1B	42.702	
1C	44.300	
2A	50.177	
2C	46.250	
3A	55.967	
3B	57.652	
4	46.202	

Reading 91

t = 175.65 sec.

Injected fuel appeared to have not ignited.

During the first fuel schedule (see fig. 6 (d)) the injected fuel appeared to ignite at time 179 seconds.

RAMJET PERFORMANCE

SUMMARY REPORT

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                P        T     M              GAMMA  MOLWT  SONV  MACH  VEL   S     /A       A/ C           ETJ  F      ISAC  PHI  ETAC
WIND TUNNEL             1     0   6
 0.000    996.499 3071    691.3( 816) 1.2906 28.956 2609
 0.000      0.154  297    -57.8(  71) 1.3964 28.955  843 7.259 6122 1.845 0.05955 13.787 0.9039   2659  5.666 192.9
SPIKE TIP NS            2     0   7
 0.600     11.212 3071    691.3( 816) 1.2902 28.955 2608
 0.600     10.326 3015    674.1( 799) 1.2921 28.955 2586 0.359  928 2.123 0.05955 13.787 0.9039   2708  1.259 2?2.2
WIND TUNNEL             3     0   0
 0.000    996.499 3071    691.3( 816) 1.2906 28.956 2609
 0.000      0.167  304    -56.2(  73) 1.3967 28.955  853 7.168 6116 1.615 0.06303 14.592 0.9039   2812  5.990 192.7
SPIKE TIP NS            4     0   0
 0.600     11.212 3071    691.3( 816) 1.2902 28.955 2608
 0.600     10.206 3007    671.7( 797) 1.2923 28.955 2583 0.384  991 2.123 0.06303 14.592 0.9039   2812  0.971 192.7
INLET THROAT            5     0   3
40.400    216.881 2978    662.8( 788) 1.2935 28.955 2572
40.400     11.267 1449    228.7( 358) 1.3509 28.955 1833 2.542 4661 1.910 0.67907 13.787 0.0793   2226 49.169 161.5
INLET UPNRSK            6     0   3
40.400    216.881 2978    662.8( 788) 1.2935 28.955 2572
40.400      9.683 1393    213.9( 343) 1.3541 28.955 1800 2.634 4740 1.910 0.61734 13.787 0.0872   2247 45.471 163.0
INLET DNNRSK            7     0   4
40.400     89.534 2978    662.8( 788) 1.2935 28.955 2572
40.400     77.006 2877    632.5( 759) 1.2967 28.955 2531 0.486 1231 1.971 0.61734 13.787 0.0872   2247 11.810 163.0
COMBUSTOR          0    8     1  21
40.410    165.353 2911    666.3( 829) 1.2977 26.736 2650
40.410     11.494 1517    241.6( 406) 1.3494 26.736 1951 2.368 4620 2.053 0.68341 13.676 0.0793   2226 49.065 160.4 0.20 0.07
COMBUSTOR          0    9     2  21
40.715    179.220 2837    666.2( 807) 1.3011 26.663 2623
40.715     12.411 1470    249.9( 393) 1.3926 26.663 1925 2.370 4564 2.040 0.68588 13.876 0.0790   2220 48.650 160.0 0.20 0.01
COMBUSTOR          0   10     3  21
41.205    157.539 2816    662.8( 801) 1.3019 26.653 2615
41.205      8.494 1365    223.2( 364) 1.3586 26.653 1860 2.522 4690 2.048 0.68107 13.876 0.0795   2196 49.641 158.2 0.20 0.00
COMBUSTOR          0   11     4  21
41.500    145.861 2808    660.7( 798) 1.3022 26.651 2612
41.500      9.058 1412    237.1( 377) 1.3559 26.651 1890 2.436 4604 2.052 0.67398 13.876 0.0804   2172 48.227 156.6 0.20 0.00
COMBUSTOR          0   12     5  21
42.460    106.732 2786    653.8( 791) 1.3029 26.651 2602
42.460      7.655 1453    248.9( 389) 1.3536 26.650 1916 2.349 4501 2.073 0.63629 13.876 0.0851   2108 44.507 151.9 0.20 0.00
COMBUSTOR          0   13     6  21
42.690     82.371 2744    659.9( 830) 1.3059 24.922 2674
42.690      7.836 1534    267.7( 440) 1.3512 24.922 2033 2.179 4430 2.202 0.63268 13.959 0.0861   2095 43.556 150.1 0.38 0.04
COMBUSTOR          0   14     7  21
42.700     88.082 2685    659.8( 811) 1.3086 24.865 2651
42.700      7.844 1470    267.9( 421) 1.3551 24.865 1996 2.219 4428 2.191 0.63259 13.959 0.0862   2094 43.532 150.0 0.38 0.01
COMBUSTOR          0   15     8  21
42.765     88.068 2675    659.4( 808) 1.3091 24.856 2647
42.765      7.895 1466    269.7( 420) 1.3553 24.856 1994 2.215 4416 2.189 0.63025 13.959 0.0865   2091 43.248 149.8 0.38 0.00
COMBUSTOR          0   16     9  21
44.310     81.496 2645    649.6( 798) 1.3101 24.855 2633
44.310     12.774 1674    334.2( 484) 1.3451 24.855 2122 1.872 3973 2.192 0.58270 13.959 0.0935   2030 35.977 145.4 0.38 0.00
COMBUSTOR          0   17    10  21
44.800     79.592 2637    647.0( 795) 1.3104 24.855 2629
44.800     14.322 1728    351.3( 501) 1.3427 24.854 2155 1.785 3846 2.193 0.57619 13.959 0.0946   2016 34.441 144.4 0.38 0.00
COMBUSTOR          0   18    11  21
45.485     74.571 2686    643.4( 810) 1.3079 24.913 2648
45.485     14.853 1811    357.0( 526) 1.3387 24.913 2199 1.721 3785 2.203 0.57288 13.959 0.0951   2004 33.096 143.6 0.38 0.03
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	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	F/A	W	A/AC	MOMTN	Q	IVAL	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.220	75.679	2624	639.7(791)	1.3105	24.663	2622											
46.220	13.[illegible]06	[illegible]	339.3(492)	1.3939	24.[illegible]	2137	1.810	[illegible]	2.195	0.55759	13.959	[illegible]	[illegible]	33.592	[illegible]	0.38	[illegible]
COMBUSTOR	0	20	13 21														
45.260	75.970	2616	639.4(788)	1.3110	24.856	2619											
46.260	12.651	1687	337.8(488)	1.3445	24.856	2130	1.828	3884	2.194	0.55494	13.959	0.0982	2009	33.500	143.9	0.38	0.00
COMBUSTOR	0	21	14 21														
47.310	73.433	2599	634.1(782)	1.3116	24.855	2611											
47.310	10.139	1589	308.0(458)	1.3491	24.855	2071	1.950	4039	2.194	0.51402	13.959	0.1059	2028	32.294	145.3	0.38	0.00
COMBUSTOR	0	22	15 21														
48.110	58.551	2879	630.2(871)	1.2985	25.142	2719											
48.110	11.005	1928	316.1(560)	1.3315	25.142	2253	1.760	3964	2.239	0.47281	13.959	0.1153	2045	29.130	146.5	0.38	0.15
COMBUSTOR	0	23	16 21														
48.725	67.466	2622	627.2(789)	1.3102	24.897	2619											
48.725	8.675	1576	289.5(453)	1.3493	24.897	2061	1.994	4111	2.205	0.43154	13.959	0.1263	2064	27.567	147.9	0.38	0.02
COMBUSTOR	0	24	17 21														
50.175	65.429	2568	621.7(772)	1.3125	24.861	2596											
50.175	6.179	1421	254.3(406)	1.3577	24.861	1964	2.183	4288	2.199	0.35070	13.959	0.1554	2106	23.366	150.9	0.38	0.00
COMBUSTOR	0	25	18 21														
50.705	63.633	2559	620.4(769)	1.3129	24.856	2592											
50.705	5.267	1367	239.7(390)	1.3607	24.856	1929	2.263	4365	2.200	0.32799	13.959	0.1662	2118	22.[illegible]	151.7	0.38	0.00
COMBUSTOR	0	26	19 21														
52.115	59.938	2550	617.8(766)	1.3132	24.855	2588											
52.115	4.250	1307	221.9(372)	1.3640	24.855	1888	2.357	4451	2.204	0.27954	13.959	0.1950	2143	19.336	153.5	0.38	0.00
COMBUSTOR	0	27	20 21														
54.215	48.612	2529	611.8(763)	1.3140	24.725	2585											
54.215	2.350	1167	179.5(332)	1.3719	24.724	1795	2.592	4651	2.228	0.22979	14.000	0.2379	2167	16.610	154.8	0.39	0.00
COMBUSTOR	0	28	21 21														
54.715	49.988	2522	611.1(761)	1.3143	24.719	2582											
54.715	2.558	1182	185.5(336)	1.3712	24.719	1805	2.557	4615	2.224	0.22040	14.000	0.2480	2171	15.808	155.1	0.39	0.00
COMBUSTOR	0	29	22 21														
55.465	49.166	2518	610.2(759)	1.3144	24.719	2580											
55.465	2.492	1176	184.2(335)	1.3714	24.718	1801	2.563	4617	2.225	0.20776	14.000	0.2631	2177	14.906	155.5	0.39	0.00
COMBUSTOR	0	30	23 21														
55.760	48.845	2517	609.8(759)	1.3145	24.719	2580											
55.760	2.466	1175	183.7(334)	1.3715	24.718	1800	2.565	4618	2.226	0.20321	14.000	0.2690	2179	14.582	155.7	0.39	0.00
COMBUSTOR	0	31	24 21														
56.225	35.753	2609	609.2(789)	1.3102	24.809	2617											
56.225	1.800	1225	167.5(348)	1.3679	24.809	1832	2.566	4701	2.261	0.16073	14.000	0.3401	2203	11.794	157.3	0.39	0.05
COMBUSTOR	0	32	25 21														
57.650	36.252	2525	607.9(762)	1.3140	24.732	2583											
57.650	1.202	1051	142.8(298)	1.3783	24.732	1707	2.826	4824	2.251	0.14856	14.000	0.3679	2212	11.137	158.0	0.39	0.01
COMBUSTOR	0	33	26 21														
57.705	39.856	2513	607.8(758)	1.3146	24.720	2578											
57.705	1.465	1075	153.7(305)	1.3771	24.720	1726	2.762	4767	2.241	0.14819	14.000	0.3689	2213	10.978	158.0	0.39	0.00
COMBUSTOR	0	34	27 21														
57.845	39.367	2511	607.7(757)	1.3147	24.719	2577											
57.845	1.405	1066	151.5(302)	1.3776	24.719	1718	2.781	4778	2.242	0.14708	14.000	0.3717	2213	10.921	158.1	0.39	0.00
COMBUSTOR	0	35	28 21														
57.925	33.707	2515	607.6(758)	1.3145	24.723	2578											
57.925	0.965	1005	132.4(284)	1.3808	24.723	1671	2.919	4877	2.255	0.14875	14.000	0.3675	2213	11.273	158.1	0.39	0.00
COMBUSTOR	0	36	29 21														
58.205	29.058	2510	607.4(757)	1.3147	24.719	2576											
58.205	0.725	965	122.1(273)	1.3830	24.719	1639	3.007	4928	2.266	0.10823	14.003	0.3688	2213	11.352	158.1	0.39	0.00
COMBUSTOR	0	37	30 21														
58.431	33.356	2509	607.2(757)	1.3147	24.719	2576											
58.431	0.927	994	130.6(281)	1.3815	24.718	1662	2.938	4883	2.255	0.14800	14.000	0.3693	2213	11.232	158.0	0.39	0.00

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                 P      T      H            GAMMA  MOLWT SONV  MACH  VEL   S      W/A        W      A/AC    RUSTH   C      CVAC  PRT  CFAC
COMBUSTOR        0     38     31   21
59.155      40.737 25[illegible]  660.0( 758) 1.3148 24.718 2575
59.155       1.575 1088   156.0( 308) 1.3764 24.718 1735 2.739 4736 [illegible] [illegible] [illegible] [illegible]   [illegible] [illegible] 156.[illegible] 0.39 0.00
COMBUSTOR        0     39     32   21
60.175      22.569 2654   605.9( 803) 1.3079 24.862 2655
60.179       0.825 1147   126.2( 325) 1.3719 24.862 1774 2.762 4899 2.302 0.14473 14.000 0.3777   2212 11.019 158.0 0.39 0.07
COMBUSTOR        0     40     33   21
62.185      34.829 2524   604.8( 761) 1.3139 24.740 2582
62.185       1.200 1062   143.3( 301) 1.3776 24.740 1715 2.802 4805 2.258 0.14977 14.000 0.3[illegible]   22[illegible]3 11.1[illegible] 197.4 0.39 0.01
COMBUSTOR        0     41     34   21
63.605      38.692 2503   604.1( 754) 1.3149 24.722 2573
63.605       1.469 1080   154.7( 306) 1.3768 24.722 1729 2.742 4742 2.243 0.15383 14.000 0.3553   2197 11.336 156.4 0.39 0.00
COMBUSTOR        0     42     35   21
66.069      32.199 2497   603.0( 753) 1.3151 24.719 2570
66.069       1.104 1047   146.1( 297) 1.3786 24.719 1704 2.806 4782 2.256 0.14581 14.000 0.3749   2187 10.836 156.2 0.39 0.00
COMBUSTOR        0     43     36   21
66.445      33.509 2496   602.9( 752) 1.3151 24.719 2570
66.445       1.409 1107   163.8( 314) 1.3753 24.718 1750 2.678 4688 2.253 0.13555 14.000 0.4032   2165  9.875 156.1 0.39 0.00
COMBUSTOR   REGEN  44     37    4
66.445      33.509 2698   671.0( 820) 1.3086 24.719 2665
66.445       2.698 1438   263.2( 414) 1.3570 24.718 1981 2.280 4518 2.279 0.13555 14.000 0.4032   2244  9.517 160.3 0.39 0.00
NOZZLE  AE         45     38    4
88.681      33.509 2496   602.9( 751) 1.3151 24.719 2570
88.681       0.217  687    33.9( 184) 1.3964 24.718 1358 3.929 5336 2.253 0.02822 14.000 1.9371   2430  2.340 173.5 0.39 0.00
NOZZLE  PO         46     39    4
88.681      33.509 2496   602.9( 751) 1.3151 24.719 2570
88.681       0.154  596    16.6( 167) 1.3961 24.718 1294 4.185 5416 2.253 0.02239 14.000 2.0408   2453  1.885 175.2 0.39 0.00
NOZZLE  AE REGEN   47     40    4
88.681      33.509 2698   671.0( 820) 1.3086 24.719 2665
88.681       0.234  736    56.3( 207) 1.3936 24.718 1436 3.862 5546 2.279 0.02822 14.000 1.9371   2529  2.432 180.7 0.39 0.00
NOZZLE  PO REGEN   48     41    4
88.681      33.509 2698   671.0( 820) 1.3086 24.719 2665
88.681       0.154  654    33.0( 183) 1.3965 24.718 1359 4.170 5650 2.279 0.02129 14.000 2.5677   2560  1.869 182.6 0.39 0.00
FICTIVE COMBUSTR   66     59    0
66.445     216.881 4367   602.9(1364) 1.2223 26.767 3149
66.445       0.154  804  -591.0( 214) 1.3757 26.831 1431 5.400 7729 2.224 0.02571 14.000 2.1261   3447  3.086 246.2 0.39 1.00
FICTIVE NOZZLE     67     60    0
88.681      46.451 2468  -593.5( 743) 1.3161 24.719 2556
88.681       0.183  563     7.3( 158) 1.3969 24.718 1258 4.304 5416 2.223 0.02822 14.000 1.9371   2448  2.375 174.6 0.39 0.00
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XABS	P-IB	P-0B	PDA	G0X	G-IB	G-0B	CAWALL	P-IH/PSO	P-IH/P10	P-0B/PSO	P-0B/P10
6.981E-01	6.900E-01	0.000	-2.708E-01	0.000	0.000	0.000	2.470E-02	4.491E 00	6.926E-04	0.000	0.000
1.830E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.654E 02	4.491E 00	[illegible]	[illegible]	0.000
3.070E 01	1.490E 00	0.000	-1.113E 02	0.000	0.000	0.000	[illegible]	5.076E 00	1.455E-03	0.000	0.000
3.508E 01	1.892E 00	0.000	-2.209E 02	0.000	0.000	0.000	6.508E 02	1.229E 01	1.849E-03	0.000	0.000
3.555E 01	2.175E 00	0.000	-2.395E 02	0.000	0.000	0.000	7.013E 02	1.413E 01	2.183E-03	0.000	0.000
3.606E 01	2.480E 00	0.000	-2.631E 02	-1.633E 02	-1.633E 02	0.000	7.246E 02	1.611E 01	2.489E-03	0.000	0.000
3.648E 01	2.123E 00	0.000	-2.828E 02	-1.673E 02	-1.673E 02	0.000	7.443E 02	1.379E 01	2.131E-03	0.000	0.000
3.658E 01	2.223E 00	3.191E 00	-3.205E 02	-1.683E 02	-1.683E 02	0.000	7.491E 02	1.443E 01	2.230E-03	2.072E 01	3.202E-03
3.659E 01	2.228E 00	3.219E 00	-3.206E 02	-1.683E 02	-1.683E 02	0.000	7.494E 02	1.447E 01	2.236E-03	2.090E 01	3.230E-03
3.701E 01	2.635E 00	5.167E 00	-3.215E 02	-1.725E 02	-1.725E 02	0.000	7.931E 02	1.711E 01	2.644E-03	3.355E 01	5.185E-03
3.725E 01	2.470E 00	6.300E 00	-3.195E 02	-1.750E 02	-1.750E 02	0.000	8.188E 02	1.604E 01	2.479E-03	4.091E 01	6.322E-03
3.803E 01	1.950E 00	8.881E 00	-2.967E 02	-1.834E 02	-1.834E 02	0.000	9.020E 02	1.266E 01	1.957E-03	5.768E 01	8.912E-03
3.871E 01	7.451E 00	1.116E 01	-2.987E 02	-2.520E 02	-1.937E 02	-5.830E 01	9.785E 02	4.839E 01	7.477E-03	7.249E 01	1.120E-02
3.875E 01	7.732E 00	1.104E 01	-2.996E 02	-2.545E 02	-1.943E 02	-6.018E 01	9.825E 02	5.022E 01	7.759E-03	7.168E 01	1.108E-02
3.901E 01	9.820E 00	1.011E 01	[illegible]	-2.739E 02	-1.997E 02	-7.419E 01	1.012E 03	6.377E 01	9.854E-03	6.564E 01	1.014E-02
3.950E 01	1.364E 01	8.353E 00	-3.365E 02	-3.126E 02	-2.121E 02	-1.005E 02	1.068E 03	8.860E 01	1.369E-02	5.425E 01	8.383E-03
3.974E 01	1.189E 01	7.512E 00	-3.491E 02	-3.324E 02	-2.193E 02	-1.131E 02	1.095E 03	7.722E 01	1.193E-02	4.879E 01	7.539E-03
4.000E 01	9.916E 00	9.507E 00	-3.558E 02	-3.557E 02	-2.284E 02	-1.272E 02	1.126E 03	6.439E 01	9.950E-03	6.174E 01	9.540E-03
4.021E 01	1.071E 01	1.105E 01	-3.577E 02	-3.742E 02	-2.360E 02	-1.382E 02	1.150E 03	6.955E 01	1.074E-02	7.176E 01	1.109E-02
4.040E 01	1.146E 01	1.147E 01	-3.586E 02	-3.921E 02	-2.436E 02	-1.486E 02	1.172E 03	7.441E 01	1.150E-02	7.449E 01	1.151E-02
4.041E 01	1.150E 01	1.149E 01	-3.586E 02	-3.931E 02	-2.440E 02	-1.491E 02	1.174E 03	7.466E 01	1.154E-02	7.463E 01	1.153E-02
4.071E 01	1.267E 01	1.215E 01	-3.600E 02	-4.216E 02	-2.563E 02	-1.653E 02	1.209E 03	8.230E 01	1.272E-02	7.891E 01	1.219E-02
4.121E 01	1.456E 01	2.425E 00	-3.764E 02	-4.684E 02	-2.775E 02	-1.910E 02	1.267E 03	9.457E 01	1.461E-02	1.575E 01	2.434E-03
4.150E 01	1.570E 01	2.416E 00	-3.955E 02	-4.973E 02	-2.912E 02	-2.061E 02	1.302E 03	1.020E 02	1.576E-02	1.569E 01	2.424E-03
4.246E 01	1.292E 01	2.385E 00	-4.456E 02	-5.944E 02	-3.367E 02	-2.577E 02	1.416E 03	8.394E 01	1.297E-02	1.549E 01	2.393E-03
4.269E 01	1.329E 01	2.377E 00	-4.552E 02	-6.175E 02	-3.471E 02	-2.704E 02	1.443E 03	8.634E 01	1.334E-02	1.544E 01	2.386E-03
4.270E 01	1.331E 01	2.377E 00	-4.557E 02	-6.185E 02	-3.475E 02	-2.709E 02	1.444E 03	8.644E 01	1.336E-02	1.544E 01	2.385E-03
4.276E 01	1.342E 01	2.375E 00	-4.584E 02	-6.247E 02	-3.503E 02	-2.744E 02	1.452E 03	8.712E 01	1.346E-02	1.542E 01	2.383E-03
4.431E 01	1.590E 01	9.649E 00	-4.980E 02	-7.603E 02	-4.001E 02	-3.602E 02	1.638E 03	1.033E 02	1.596E-02	6.266E 01	9.683E-03
4.480E 01	1.669E 01	1.196E 01	-5.059E 02	-7.980E 02	-4.094E 02	-3.886E 02	1.698E 03	1.084E 02	1.675E-02	7.765E 01	1.200E-08
4.549E 01	1.452E 01	1.518E 01	-5.092E 02	-8.465E 02	-4.203E 02	-4.283E 02	1.782E 03	9.433E 01	1.458E-02	9.859E 01	1.523E-02
4.620E 01	1.227E 01	1.375E 01	-4.970E 02	-9.003E 02	-4.313E 02	-4.689E 02	1.869E 03	7.967E 01	1.231E-02	8.927E 01	1.379E-02
4.626E 01	1.208E 01	1.362E 01	-4.952E 02	-9.045E 02	-4.323E 02	-4.723E 02	1.877E 03	7.844E 01	1.212E-02	8.846E 01	1.367E-02
4.731E 01	8.762E 00	1.152E 01	-4.637E 02	-9.775E 02	-4.481E 02	-5.294E 02	2.006E 03	5.691E 01	8.793E-03	7.479E 01	1.156E-02
4.811E 01	1.210E 01	9.910E 00	-4.377E 02	-1.032E 03	-4.598E 02	-5.722E 02	2.105E 03	7.858E 01	1.214E-02	6.436E 01	9.945E-03
4.872E 01	8.675E 00	8.675E 00	-4.122E 02	-1.074E 03	-4.687E 02	-6.052E 02	2.182E 03	5.634E 01	8.705E-03	5.634E 01	8.705E-03
5.017E 01	6.179E 00	6.179E 00	-3.567E 02	-1.151E 03	-4.888E 02	-6.618E 02	2.363E 03	4.013E 01	6.201E-03	4.013E 01	6.201E-03
5.071E 01	5.267E 00	5.267E 00	-3.404E 02	-1.168E 03	-4.960E 02	-6.720E 02	2.429E 03	3.420E 01	5.285E-03	3.420E 01	5.285E-03
5.211E 01	4.250E 00	4.250E 00	-3.057E 02	-1.204E 03	-5.143E 02	-6.899E 02	2.607E 03	2.760E 01	4.265E-03	2.760E 01	4.265E-03
5.421E 01	2.350E 00	2.350E 00	-2.694E 02	-1.250E 03	-5.401E 02	-7.100E 02	2.873E 03	1.526E 01	2.358E-03	1.526E 01	2.358E-03
5.471E 01	2.558E 00	2.558E 00	-2.630E 02	-1.260E 03	-5.459E 02	-7.136E 02	2.937E 03	1.661E 01	2.567E-03	1.661E 01	2.567E-03
5.546E 01	2.492E 00	2.492E 00	-2.532E 02	-1.273E 03	-5.544E 02	-7.188E 02	3.033E 03	1.618E 01	2.501E-03	1.618E 01	2.501E-03
5.576E 01	2.466E 00	2.466E 00	-2.495E 02	-1.278E 03	-5.577E 02	-7.207E 02	3.070E 03	1.602E 01	2.475E-03	1.602E 01	2.475E-03
5.622E 01	1.175E 00	2.425E 00	-2.250E 02	-1.286E 03	-5.623E 02	-7.236E 02	3.102E 03	7.631E 00	1.179E-03	1.575E 01	2.434E-03
5.765E 01	1.202E 00	1.202E 00	-2.121E 02	-1.305E 03	-5.740E 02	-7.315E 02	3.210E 03	7.803E 00	1.206E-03	7.803E 00	1.206E-03
5.771E 01	1.775E 00	1.154E 00	-2.118E 02	-1.306E 03	-5.744E 02	-7.317E 02	3.217E 03	1.153E 01	1.781E-03	7.496E 00	1.158E-03
5.789E 01	1.775E 00	1.034E 00	-2.111E 02	-1.308E 03	-5.755E 02	-7.324E 02	3.234E 03	1.153E 01	1.781E-03	6.716E 00	1.038E-03
5.792E 01	9.654E-01	9.654E-01	-2.107E 02	-1.309E 03	-5.761E 02	-7.328E 02	3.245E 03	6.270E 00	9.688E-04	6.270E 00	9.688E-04
5.821E 01	7.250E-01	7.250E-01	-2.096E 02	-1.312E 03	-5.782E 02	-7.341E 02	3.280E 03	4.708E 00	7.275E-04	4.708E 00	7.275E-04
5.843E 01	9.272E-01	9.272E-01	-2.088E 02	-1.315E 03	-5.799E 02	-7.351E 02	3.309E 03	6.022E 00	9.305E-04	6.022E 00	9.305E-04
5.915E 01	1.575E 00	1.575E 00	-2.054E 02	-1.323E 03	-5.850E 02	-7.382E 02	3.402E 03	1.023E 01	1.581E-03	1.023E 01	1.581E-03
6.017E 01	8.250E-01	8.250E-01	-2.026E 02	-1.333E 03	-5.918E 02	-7.415E 02	3.532E 03	5.358E 00	8.279E-04	5.358E 00	8.279E-04
6.218E 01	1.200E 00	1.200E 00	-2.024E 02	-1.348E 03	-6.033E 02	-7.451E 02	3.790E 03	7.793E 00	1.204E-03	7.793E 00	1.204E-03
6.360E 01	1.469E 00	1.469E 00	-2.024E 02	-1.356E 03	-6.100E 02	-7.480E 02	3.972E 03	9.538E 00	1.474E-03	9.538E 00	1.474E-03
6.607E 01	1.104E 00	1.104E 00	-2.024E 02	-1.373E 03	-6.184E 02	-7.544E 02	4.289E 03	7.168E 00	1.108E-03	7.168E 00	1.108E-03
6.644E 01	1.770E 00	1.046E 00	-2.024E 02	-1.375E 03	-6.194E 02	-7.555E 02	4.337E 03	1.149E 01	1.776E-03	6.806E 00	1.052E-03

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6.649E 01	1.770E 00	1.042E [illegible]	-2.[illegible] 02	-1.575E 03	-6.195E 02	-7.556E 02	[illegible]	[illegible]	[illegible]	[illegible]	1.[illegible]
6.668E 01	1.763E 00	1.612E 00	-2.[illegible] 02	-1.57[illegible] 03	-6.190E 02	-7.[illegible] 02	[illegible]	[illegible]	[illegible]	[illegible]	1.[illegible]
6.835E 01	1.890E 00	1.25[illegible] 00	-1.8[illegible] 02	-1.5[illegible] 03	-6.2[illegible] 02	-7.571E 02	[illegible]	[illegible]	[illegible]	[illegible]	1.[illegible]E-03
6.901E 01	1.508E 00	2.047E 00	-1.529E 02	-1.400E 03	-6.268E 02	-7.741E 02	[illegible] 03	[illegible]	1.5[illegible]E-03	1.330E 01	2.055E-03
6.978E 01	1.070E 00	1.369E 00	-1.120E 02	-1.41[illegible] 03	-6.295E 02	-7.801E 02	[illegible] 03	6.9?4E 01	1.174E-03	2.89?E 00	1.374E-03
7.050E 01	8.589E-01	7.350E-01	-8.571E 01	-1.418E 03	-6.327E 02	-7.856E 02	[illegible]	5.57?E 00	[illegible]E-04	4.773E 00	7.376E-04
7.111E 01	[illegible]E-01	7.027E-01	-6.9[illegible] 01	-1.425E 03	-6.[illegible] 02	-7.[illegible] 02	[illegible]	[illegible]	[illegible]	[illegible] 01	7.[illegible]
7.249E 01	7.650E-01	8.255E-01	-3.401E 01	-1.436E 03	-6.[illegible] 02	-7.927E 02	5.[illegible]	[illegible]	7.[illegible]E-04	5.361E 00	8.284E-04
7.402E 01	6.470E-01	8.950E-01	3.129E 00	-1.455E 03	-6.538E 02	-8.00[illegible] 02	5.273E 03	[illegible] 00	[illegible]	5.81?E 00	8.901E-04
7.492E 01	5.776E-01	2.300E-01	2.547E 01	-1.469E 03	-6.578E 02	-8.110E 02	5.372E 03	3.751E 00	5.796E-04	1.494E 00	2.308E-04
7.493E 01	5.773E-01	2.270E-01	2.593E 01	-1.469E 03	-6.578E 02	-8.111E 02	5.372E 03	3.749E 00	5.79?E-04	1.474E 00	2.278E-04
7.625E 01	4.750E-01	0.000	3.704E 01	-1.492E 03	-6.625E 02	-8.297E 02	5.424E 03	3.085E 00	4.767E-04	0.000	0.000
7.910E 01	3.150E-01	0.000	5.280E 01	-1.499E 03	-6.689E 02	-8.297E 02	5.523E 03	2.046E 00	3.161E-04	0.000	0.000
8.300E 01	2.150E-01	0.000	6.417E 01	-1.502E 03	-6.725E 02	-8.297E 02	5.627E 03	1.396E 00	2.156E-04	0.000	0.000
8.581E 01	2.600E-01	0.000	6.944E 01	-1.504E 03	-6.739E 02	-8.297E 02	5.682E 03	1.689E 00	2.6[illegible]E-04	0.000	0.000
8.867E 01	3.250E-01	0.000	7.650E 01	-1.506E 03	-6.766E 02	-8.297E 02	5.705E 03	2.111E 00	3.261E-04	0.000	0.000
8.868E 01	3.251E-01	0.000	7.650E 01	-1.506E 03	-6.766E 02	-8.297E 02	5.705E 03	2.112E 00	3.263E-04	0.000	0.000

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READING = 0091 BLOCK = 74 TIME = 175.651 MACH 7.5 [illegible] PAGE [illegible]

X	DDRAG	CDRAG	CF	HC
4.040E 01	9.091E 01	9.091E 01	[illegible]	3.495E-02
4.041E 01	1.566E-01	9.107E 01	2.905E-03	3.347E-02
4.071E 01	4.879E 00	9.595E 01	2.609E-03	3.887E-02
4.121E 01	7.332E 00	1.033E 02	2.572E-03	2.979E-02
4.150E 01	4.412E 00	1.077E 02	2.606E-03	3.069E-02
4.246E 01	1.414E 01	1.218E 02	2.739E-03	2.623E-02
4.269E 01	3.625E 00	1.255E 02	3.259E-03	2.403E-02
4.270E 01	1.585E-01	1.256E 02	2.897E-03	2.712E-02
4.276E 01	9.697E-01	1.266E 02	2.842E-03	2.759E-02
4.431E 01	2.120E 01	1.478E 02	2.909E-03	3.672E-02
4.480E 01	6.131E 00	1.539E 02	2.936E-03	3.913E-02
4.549E 01	8.382E 00	1.623E 02	2.952E-03	3.978E-02
4.620E 01	8.740E 00	1.710E 02	2.980E-03	3.594E-02
4.626E 01	7.292E-01	1.718E 02	2.936E-03	3.606E-02
4.731E 01	1.239E 01	1.842E 02	2.880E-03	3.066E-02
4.811E 01	8.722E 00	1.929E 02	2.850E-03	3.184E-02
4.872E 01	6.398E 00	1.993E 02	3.049E-03	2.497E-02
5.017E 01	1.337E 01	2.126E 02	2.747E-03	2.029E-02
5.071E 01	4.115E 00	2.168E 02	2.681E-03	1.612E-02
5.211E 01	9.771E 00	2.265E 02	2.613E-03	1.515E-02
5.421E 01	1.250E 01	2.390E 02	2.613E-03	9.427E-03
5.471E 01	2.666E 00	2.417E 02	2.549E-03	1.007E-02
5.546E 01	3.732E 00	2.454E 02	2.524E-03	9.782E-03
5.576E 01	1.403E 00	2.468E 02	2.516E-03	9.669E-03
5.622E 01	1.025E 00	2.479E 02	2.451E-03	7.303E-03
5.765E 01	3.094E 00	2.510E 02	2.573E-03	5.182E-03
5.771E 01	1.954E-01	2.512E 02	2.443E-03	6.165E-03
5.785E 01	4.738E-01	2.516E 02	2.427E-03	5.994E-03
5.792E 01	2.800E-01	2.519E 02	2.503E-03	4.481E-03
5.821E 01	1.012E 00	2.529E 02	2.511E-03	3.630E-03
5.843E 01	8.081E-01	2.537E 02	2.453E-03	4.376E-03
5.915E 01	2.467E 00	2.562E 02	2.399E-03	6.467E-03
6.017E 01	3.449E 00	2.596E 02	2.454E-03	3.970E-03
6.218E 01	7.265E 00	2.669E 02	2.621E-03	5.001E-03
6.360E 01	5.186E 00	2.721E 02	2.435E-03	6.056E-03
6.607E 01	8.600E 00	2.807E 02	2.473E-03	4.882E-03
6.644E 01	1.237E 00	2.819E 02	2.478E-03	5.823E-03
6.649E 01	1.059E-01	2.820E 02	2.428E-03	5.690E-03
6.668E 01	4.316E-01	2.825E 02	2.425E-03	5.662E-03
6.835E 01	3.743E 00	2.862E 02	2.434E-03	6.126E-03
6.901E 01	1.516E 00	2.877E 02	2.451E-03	6.684E-03
6.978E 01	1.634E 00	2.894E 02	2.379E-03	5.085E-03
7.050E 01	1.186E 00	2.905E 02	2.300E-03	3.719E-03
7.111E 01	8.393E-01	2.914E 02	2.280E-03	3.452E-03
7.249E 01	1.881E 00	2.933E 02	2.289E-03	3.696E-03
7.402E 01	2.120E 00	2.954E 02	2.275E-03	3.598E-03
7.492E 01	9.306E-01	2.963E 02	2.164E-03	2.231E-03
7.493E 01	1.198E-03	2.963E 02	2.164E-03	2.224E-03
7.625E 01	4.052E-01	2.967E 02	2.186E-03	2.506E-03
7.910E 01	7.082E-01	2.974E 02	2.110E-03	1.842E-03
8.300E 01	5.736E-01	2.980E 02	2.038E-03	1.377E-03
8.581E 01	2.761E-01	2.983E 02	2.057E-03	1.577E-03
8.867E 01	1.318E-01	2.984E 02	2.062E-03	1.652E-03
8.868E 01	0.000	2.984E 02	2.062E-03	1.652E-03

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RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-228.	(LBF)
MEASURED THRUST	-225.	(LBF)
CALCULATED SPECIFIC IMPULSE	-1267.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-1252.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.1570	
MEASURED THRUST COEFFICIENT	-.1552	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	2548.	(LBF)
NET THRUST	-127.	(LBF)
SPECIFIC IMPULSE	-708.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.0877	

MOMENTUM AND FORCES

INLET FRICTION DRAG	90.9	(LBF)
INLET MOMENTUM CHANGE	-449.5	(LBF)
COMBUSTOR FRICTION DRAG	191.0	(LBF)
COMBUSTOR STRUT DRAG	5.91	(LBF)
COMBUSTOR MOMENTUM CHANGE	-41.	(LBF)
NOZZLE FRICTION DRAG	16.48	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	262.	(LBF)
NOZZLE PRESSURE INTEGRAL	279.	(LBF)
EXTERNAL FRICTION DRAG	54.34	(LBF)
EXTERNAL PRESSURE INTEGRAL	-653.	(LBF)
TOTAL EXTERNAL DRAG	-707.	(LBF)
TOTAL STRUT DRAG	5.91	(LBF)
CAVITY FORCE	-524.	(LBF)
CALCULATED LOAD CELL FORCE	-1459.	(LBF)
MEASURED LOAD CELL FORCE	-1454.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7050	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.589	(IN)
NOZZLE SHROUD TRAILING EDGE	74.929	(IN)
NOZZLE PLUG TRAILING EDGE	88.681	(IN)
STRUT LEADING EDGE	57.845	(IN)
STRUT TRAILING EDGE	66.445	(IN)
COMBUSTOR EXIT	66.445	(IN)

INLET

ANGLE OF ATTACK	3.000	(DEGREES)
MASS FLOW RATIO	0.9059	
ADDITIVE DRAG COEFFICIENT	0.0087	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0866	
DELTA PT2	.0652	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.2176	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.0898	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8791	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9058	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9158	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8752	
ENTHALPY AT P0 - SUPERSONIC	-23.17	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	7.24	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0130
EQUIVALENCE RATIO	0.393
COMBUSTION EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.1545
COMBUSTOR EFFECTIVENESS	0.1823
INJECTOR DISCHARGE COEFFICIENTS	0.9519, 0.5579,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	1.0074
NOZZLE COEFFICIENT - CT	0.9666
PROCESS EFFICIENCY	1.1286
KINETIC ENERGY EFFICIENCY	1.0146

FUEL INJECTIONS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.490	B
1C	44.300	
2A	50.165	
2C	46.250	
3A	55.455	
3B	57.640	
4	46.190	

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RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

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	P	T	H	GAMMA	MOL WT	SONV	MACH	VEL	S	ZA		A/AC	[illegible]		ISAC	[illegible]	[illegible]
WIND TUNNEL		1	0 5														
0.000	995.999	3035	680.3(809)	1.2917	28.956	2595											
0.000	0.154	292	-58.9(70)	1.3963	28.955	837	7.265	6082	1.811	0.06004	13.691	0.9032	2661	5.675	191.6		
SPIKE TIP NS		2	0 7														
0.600	11.225	3035	680.3(805)	1.2914	28.955	2594											
0.600	10.336	2979	663.3(788)	1.2933	28.955	2572	0.359	924	2.119	0.06004	13.691	0.9032	2756	[illegible].062	2[illegible]		
WIND TUNNEL		3	0 0														
0.000	995.999	3035	680.3(805)	1.2917	28.956	2595											
0.000	0.167	299	-57.2(72)	1.3969	28.955	867	7.174	6075	1.811	0.06553	14.698	0.9032	2814	5.996	191.4		
SPIKE TIP NS		4	0 0														
0.600	11.225	3035	680.3(805)	1.2914	28.955	2594											
0.600	10.216	2971	660.9(786)	1.2935	28.955	2569	0.384	986	2.119	0.06553	14.698	0.9032	2814	0.974	191.4		
INLET THROAT		5	0 4														
40.400	201.461	2965	658.8(784)	1.2939	28.955	2566											
40.400	11.895	1490	239.6(368)	1.3485	28.955	1858	2.466	4580	1.914	0.08499	13.891	0.0792	2219	46.757	159.7		
INLET UPNRSK		6	0 3														
40.400	201.461	2965	658.8(784)	1.2939	28.955	2566											
40.400	10.209	1432	224.3(353)	1.3518	28.955	1823	2.557	4063	1.914	0.62272	13.891	0.0871	2241	45.126	161.3		
INLET DNNRSK		7	0 4														
40.400	89.166	2965	658.8(784)	1.2939	28.955	2566											
40.400	76.360	2862	627.8(754)	1.2972	28.955	2525	0.493	1245	1.970	0.62272	13.891	0.0871	2241	12.052	161.3		
COMBUSTOR	0	8	1 13														
40.410	156.340	2859	668.2(824)	1.3003	26.337	2649											
40.410	14.739	1606	279.2(438)	1.3456	26.337	2020	2.185	4412	2.075	0.69016	13.997	0.0792	2219	47.324	15?.5	0.23	0.04
COMBUSTOR	0	9	2 4														
40.719	125.987	3089	666.0(894)	1.2894	26.590	2729											
40.719	18.852	1973	311.4(544)	1.3276	26.591	2213	1.904	4213	2.110	0.69267	13.997	0.0789	2214	45.347	156.1	0.23	0.24
COMBUSTOR	0	10	3 21														
41.209	141.188	2830	662.4(815)	1.3013	26.326	2637											
41.209	12.574	1564	270.6(426)	1.3478	26.325	1996	2.219	4428	2.079	0.68772	13.997	0.0795	2182	47.323	155.9	0.23	0.04
COMBUSTOR	0	11	4 21														
41.500	131.114	2786	660.2(802)	1.3033	26.287	2621											
41.500	13.975	1609	295.7(439)	1.3460	26.286	2024	2.110	4271	2.080	0.68064	13.997	0.0803	2145	45.173	153.3	0.23	0.01
COMBUSTOR	0	12	5 2														
42.460	87.412	2760	651.9(793)	1.3042	26.286	2609											
42.460	20.552	1946	396.5(540)	1.3319	26.285	2214	1.615	3574	2.108	0.64228	13.997	0.0851	2003	35.677	143.1	0.23	0.00
COMBUSTOR	0	13	6 21														
42.694	71.227	2710	660.5(840)	1.3078	24.250	2696											
42.694	21.221	2021	427.2(608)	1.3315	24.250	2349	1.455	3417	2.257	0.64032	14.099	0.0860	1965	34.002	139.3	0.46	0.04
COMBUSTOR	0	14	7 21														
42.704	73.497	2639	660.4(817)	1.3111	24.183	2667											
42.704	21.249	1949	420.0(586)	1.3350	24.183	2313	1.475	3410	2.247	0.63936	14.099	0.0861	1963	33.883	139.2	0.46	0.01
COMBUSTOR	0	15	8 21														
42.769	72.424	2626	659.8(813)	1.3117	24.173	2662											
42.769	21.435	1950	432.1(586)	1.3350	24.173	2314	1.458	3375	2.246	0.63830	14.099	0.0862	1952	33.478	138.5	0.46	0.00
COMBUSTOR	0	16	9 21														
44.310	56.133	2583	645.3(798)	1.3131	24.172	2641											
44.310	37.678	2346	564.6(718)	1.3210	24.171	2525	0.796	2010	2.262	0.58893	14.099	0.0935	1763	16.397	126.5	0.46	0.00
COMBUSTOR	0	17	10 21														
44.800	51.648	3621	641.0(1141)	1.2613	25.232	3000											
44.800	42.843	3483	588.8(1092)	1.2668	25.236	2948	0.549	1617	2.350	0.58201	14.099	0.0946	1747	14.630	123.9	0.46	0.48
COMBUSTOR	0	18	11 21														
45.489	54.001	2716	635.2(841)	1.3066	24.325	2693											
45.489	44.157	2590	591.6(798)	1.3108	24.325	2634	0.561	1477	2.279	0.57902	14.099	0.0951	1723	13.292	122.2	0.46	0.07

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                 P      T     H         GAMMA  MOLWT  SONV  MACH  VEL   S     A/A      F      A/AC     PORTM   D     TVAC  PHI  ETAC
COMBUSTOR        0     19    12  21
46.204       52.451  2561   629.5( 799) 1.3135 24.194 2629
46.204       37.128  2357   559.8( 721) 1.3204 24.194 2529 0.739 1868 2.264 0.56283 14.099 0.0974   1749 16.343 124.6 0.46 0.01
COMBUSTOR        0     20    13  21
46.260       52.471  2539   629.1( 783) 1.3145 24.175 2620
46.260       36.577  2327   557.0( 711) 1.3216 24.175 2515 0.755 1900 2.261 0.56095 14.099 0.0981   1752 16.564 124.3 0.46 0.00
COMBUSTOR        0     21    14  21
47.310       51.471  2515   621.8( 775) 1.3154 24.172 2608
47.310       26.254  2135   493.4( 647) 1.3283 24.172 2415 1.050 2535 2.260 0.51988 14.099 0.1059   1823 20.486 129.3 0.46 0.00
COMBUSTOR        0     22    15  21
48.110       51.945  2499   616.7( 769) 1.3159 24.171 2601
48.110       20.236  1983   443.6( 597) 1.3338 24.171 2333 1.262 2943 2.257 0.47789 14.099 0.1152   1887 21.855 133.8 0.46 0.00
COMBUSTOR        0     23    16   4
48.729       50.491  2563   612.7( 790) 1.3128 24.242 2627
48.729       17.625  1982   417.5( 594) 1.3330 24.242 2328 1.342 3125 2.266 0.43588 14.099 0.1263   1940 21.170 137.6 0.46 0.03
COMBUSTOR        0     24    17   4
50.179       45.891  2733   605.0( 845) 1.3047 24.425 2694
50.179       12.963  2015   362.4( 604) 1.3296 24.425 2336 1.492 3485 2.291 0.35423 14.099 0.1594   2043 19.182 144.9 0.46 0.12
COMBUSTOR        0     25    18   3
50.709       45.472  2737   603.0( 846) 1.3044 24.434 2695
50.709       11.258  1954   338.8( 584) 1.3314 24.434 2301 1.580 3636 2.292 0.33129 14.099 0.1662   2073 18.721 147.0 0.46 0.12
COMBUSTOR        0     26    19   4
52.119       40.921  2892   598.6( 897) 1.2970 24.598 2754
52.119        9.575  2047   311.1( 612) 1.3263 24.598 2343 1.619 3793 2.314 0.28235 14.099 0.1950   2140 16.643 151.8 0.46 0.20
COMBUSTOR        0     27    20   9
54.219       55.896  2499   591.0( 772) 1.3150 24.123 2602
54.219        4.450  1317   204.2( 386) 1.3636 24.123 1924 2.287 4399 2.258 0.23210 14.141 0.2379   2205 15.669 155.9 0.47 0.04
COMBUSTOR        0     28    21   4
54.719       48.637  2600   589.8( 805) 1.3103 24.221 2645
54.719        4.750  1455   211.5( 428) 1.3552 24.221 2012 2.163 4351 2.281 0.22261 14.141 0.2480   2214 15.652 156.6 0.47 0.08
COMBUSTOR        0     29    22   4
55.469       53.410  2519   586.1( 778) 1.3140 24.150 2611
55.469        3.906  1300   189.1( 381) 1.3643 24.150 1911 2.339 4468 2.264 0.20985 14.141 0.2631   2227 14.572 157.5 0.47 0.05
COMBUSTOR        0     30    23   3
55.760       56.415  2480   587.5( 765) 1.3157 24.115 2594
55.760        3.578  1228   180.0( 359) 1.3686 24.114 1862 2.426 4516 2.255 0.20531 14.141 0.2689   2231 14.409 157.6 0.47 0.03
COMBUSTOR        0     31    24   3
56.229       51.469  2499   586.7( 772) 1.3149 24.134 2601
56.229        2.603  1166   153.7( 340) 1.3719 24.134 1815 2.564 4654 2.265 0.16234 14.141 0.3401   2272 11.742 160.7 0.47 0.04
COMBUSTOR        0     32    25  21
57.654       57.811  2411   584.5( 743) 1.3188 24.059 2563
57.654        1.377   908   103.9( 263) 1.3861 24.059 1613 3.041 4904 2.245 0.15005 14.141 0.3679   2285 11.436 161.6 0.47 0.01
COMBUSTOR        0     33    26   4
57.709       47.109  2536   584.4( 784) 1.3131 24.175 2617
57.709        2.444  1194   147.8( 348) 1.3699 24.175 1834 2.548 4674 2.276 0.14963 14.141 0.3690   2285 10.869 161.6 0.47 0.06
COMBUSTOR        0     34    27   3
57.849       48.332  2518   584.3( 778) 1.3139 24.159 2609
57.849        2.361  1165   144.8( 339) 1.3717 24.159 1814 2.585 4689 2.272 0.14855 14.141 0.3717   2286 10.826 161.6 0.47 0.05
COMBUSTOR        0     35    28  21
57.929       44.116  2482   584.2( 766) 1.3155 24.126 2594
57.929        1.054   941    89.5( 272) 1.3839 24.126 1639 3.036 4975 2.276 0.15021 14.141 0.3675   2286 11.614 161.6 0.47 0.04
COMBUSTOR        0     36    29  21
58.209       45.579  2407   583.9( 742) 1.3189 24.057 2562
58.209        0.725   810    75.3( 234) 1.3964 24.057 1525 3.307 5044 2.264 0.14974 14.141 0.3687   2286 11.739 161.6 0.47 0.01
COMBUSTOR        0     37    30  21
58.435       53.028  2396   583.6( 738) 1.3195 24.047 2556
58.435        0.927   827    83.9( 239) 1.3899 24.047 1541 3.244 5000 2.250 0.14944 14.141 0.3695   2285 11.612 161.6 0.47 0.00
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              P      T      H            GAMMA  MOLWT SONV  MACH  VEL   S      F/A            A/AE    RHO?        ?    ?VAL  PHI  ETAC
COMBUSTOR         0  38   31  21
59.159      61.465 2392  582.6( 737) 1.3196 24.046 2555
59.159       1.575  918  111.5( 266) 1.3857 24.046 1622 2.994 4056 2.237 0.14712 14.141 0.3753   2256 11.103 161.6 0.47 0.00
COMBUSTOR         0  39   32  21
60.179      51.260 2389  581.9( 736) 1.3197 24.046 2553
60.179       0.850  612   80.2( 235) 1.3906 24.045 1528 3.280 5011 2.252 0.14618 14.141 0.3777   2264 11.383 161.5 0.47 0.00
COMBUSTOR         0  40   33   5
62.189      36.535 2696  580.0( 836) 1.3056 24.338 2681
62.189       3.112 1464  172.1( 430) 1.3535 24.339 2012 2.245 4518 2.313 0.15127 14.141 0.3650   2277 10.921 161.0 0.47 0.13
COMBUSTOR         0  41   34   4
63.609      43.718 2568  578.7( 794) 1.3114 24.221 2629
63.609       2.756 1278  156.7( 373) 1.3649 24.221 1892 2.429 4595 2.285 0.15537 14.141 0.3553   2271 11.095 160.6 0.47 0.08
COMBUSTOR         0  42   35  21
66.073      51.191 2400  576.2( 739) 1.3190 24.071 2557
66.073       1.451  949  111.3( 275) 1.3840 24.071 1647 2.929 4823 2.253 0.14727 14.141 0.3749   2259 11.039 159.8 0.47 0.01
COMBUSTOR         0  43   36   6
66.449      24.726 2939  575.8( 915) 1.2938 24.587 2773
66.449       3.821 1882  216.8( 560) 1.3315 24.588 2251 1.883 4239 2.365 0.13691 14.141 0.4032   2258  9.019 159.7 0.47 0.24
COMBUSTOR  REGEN  44  37   3
66.449      24.726 3161  656.0( 993) 1.2858 24.586 2867
66.449       4.132 2079  281.3( 624) 1.3239 24.588 2359 1.835 4330 2.391 0.13691 14.141 0.4032   2330  9.213 164.6 0.47 0.24
NOZZLE  AE        45  38   4
88.685      24.726 2939  575.8( 913) 1.2938 24.587 2773
88.685       0.307  971  -65.3( 278) 1.3787 24.588 1605 3.442 5664 2.365 0.02850 14.141 1.9371   2642  2.509 186.6 0.47 0.24
NOZZLE  PO        46  39   4
88.685      24.726 2939  575.8( 913) 1.2938 24.587 2773
88.685       0.154  802 -114.7( 228) 1.3869 24.586 1500 3.919 5878 2.365 0.01796 14.141 3.0746   2705  1.696 191.3 0.47 0.24
NOZZLE  AE REGEN  47  40   4
88.685      24.726 3161  656.0( 993) 1.2858 24.586 2867
88.685       0.331 1083  -32.3( 311) 1.3725 24.588 1734 3.385 5869 2.391 0.02850 14.141 1.9372   2743  2.599 194.0 0.47 0.24
NOZZLE  PO REGEN  48  41   4
88.685      24.726 3161  656.0( 993) 1.2858 24.586 2867
88.685       0.154  878  -92.6( 251) 1.3834 24.588 1567 3.905 6120 2.391 0.01708 14.141 3.2323   2817  1.625 199.2 0.47 0.24
FICTIVE COMBUSTR  66  59   0
66.449     201.461 4527  575.8(1452) 1.2120 26.363 3217
66.449       0.154  881 -694.8( 240) 1.3694 26.459 1506 5.295 7974 2.279 0.02386 14.141 2.3136   3596  2.957 254.3 0.47 1.00
FICTIVE NOZZLE    67  60   0
88.685      23.661 2909  565.0( 905) 1.2949 24.587 2759
88.685       0.311  974  -64.5( 279) 1.3765 24.586 1648 3.406 5613 2.365 0.02850 14.141 1.9371   2621  2.486 185.4 0.47 0.24
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READING = 0091 BLOCK = 79 TIME = 160.151 MACH 7.3 PT = 995.999 TT = 3035.3

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/PBU	P-IB/PTO	P-OB/PBU	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.711E-01	0.000	0.000	0.000	2.470E-02	4.440E 00	6.928E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.440E 00	6.928E-04	0.000	0.000
3.070E 01	1.500E 00	0.000	-1.117E 02	0.000	0.000	0.000	5.353E 02	9.739E 00	1.506E-03	0.000	0.000
3.508E 01	1.897E 00	0.000	-2.218E 02	0.000	0.000	0.000	6.804E 02	1.232E 01	1.905E-03	0.000	0.000
3.555E 01	2.190E 00	0.000	-2.405E 02	0.000	0.000	0.000	7.013E 02	1.422E 01	2.199E-03	0.000	0.000
3.606E 01	2.485E 00	0.000	-2.642E 02	-9.279E 01	-9.279E 01	0.000	7.246E 02	1.613E 01	2.495E-03	0.000	0.000
3.648E 01	2.122E 00	0.000	-2.839E 02	-9.503E 01	-9.503E 01	0.000	7.443E 02	1.378E 01	2.130E-03	0.000	0.000
3.659E 01	2.225E 00	3.181E 00	-3.217E 02	-9.562E 01	-9.562E 01	0.000	7.493E 02	1.445E 01	2.234E-03	2.065E 01	3.193E-03
3.659E 01	2.231E 00	3.208E 00	-3.218E 02	-9.566E 01	-9.566E 01	0.000	7.496E 02	1.449E 01	2.240E-03	2.083E 01	3.221E-03
3.701E 01	2.635E 00	5.136E 00	-3.228E 02	-9.801E 01	-9.801E 01	0.000	7.928E 02	1.711E 01	2.646E-03	3.335E 01	5.157E-03
3.726E 01	2.469E 00	6.287E 00	-3.208E 02	-9.946E 01	-9.946E 01	0.000	8.190E 02	1.603E 01	2.479E-03	4.082E 01	6.313E-03
3.803E 01	1.955E 00	8.852E 00	-2.982E 02	-1.043E 02	-1.043E 02	0.000	9.020E 02	1.269E 01	1.963E-03	5.747E 01	8.888E-03
3.872E 01	7.485E 00	1.114E 01	-3.005E 02	-1.597E 02	-1.131E 02	-4.658E 01	9.787E 02	4.859E 01	7.515E-03	7.235E 01	1.119E-02
3.875E 01	7.733E 00	1.103E 01	-3.013E 02	-1.617E 02	-1.138E 02	-4.792E 01	9.822E 02	5.021E 01	7.764E-03	7.163E 01	1.108E-02
3.901E 01	9.820E 00	1.010E 01	-3.105E 02	-1.788E 02	-1.197E 02	-5.911E 01	1.012E 03	6.376E 01	9.859E-03	6.555E 01	1.014E-02
3.950E 01	1.393E 01	8.335E 00	-3.389E 02	-2.154E 02	-1.352E 02	-8.013E 01	1.068E 03	9.042E 01	1.398E-02	5.411E 01	8.368E-03
3.974E 01	1.254E 01	7.475E 00	-3.529E 02	-2.355E 02	-1.451E 02	-9.035E 01	1.095E 03	8.140E 01	1.259E-02	4.853E 01	7.505E-03
4.000E 01	1.102E 01	9.481E 00	-3.608E 02	-2.593E 02	-1.578E 02	-1.015E 02	1.126E 03	7.154E 01	1.106E-02	6.156E 01	9.519E-03
4.021E 01	1.304E 01	1.109E 01	-3.650E 02	-2.794E 02	-1.690E 02	-1.104E 02	1.150E 03	8.466E 01	1.309E-02	7.198E 01	1.113E-02
4.040E 01	1.489E 01	1.432E 01	-3.680E 02	-2.981E 02	-1.796E 02	-1.185E 02	1.172E 03	9.665E 01	1.495E-02	9.300E 01	1.438E-02
4.041E 01	1.498E 01	1.449E 01	-3.680E 02	-2.991E 02	-1.802E 02	-1.189E 02	1.173E 03	9.726E 01	1.504E-02	9.410E 01	1.455E-02
4.072E 01	1.797E 01	1.973E 01	-3.680E 02	-3.301E 02	-1.980E 02	-1.320E 02	1.210E 03	1.167E 02	1.804E-02	1.281E 02	1.981E-02
4.121E 01	2.271E 01	2.437E 00	-3.920E 02	-3.807E 02	-2.282E 02	-1.525E 02	1.267E 03	1.474E 02	2.280E-02	1.583E 01	2.447E-03
4.150E 01	2.552E 01	2.424E 00	-4.245E 02	-4.117E 02	-2.473E 02	-1.644E 02	1.301E 03	1.657E 02	2.563E-02	1.574E 01	2.434E-03
4.246E 01	3.872E 01	2.380E 00	-5.537E 02	-5.284E 02	-3.107E 02	-2.177E 02	1.416E 03	2.514E 02	3.888E-02	1.545E 01	2.389E-03
4.269E 01	4.007E 01	2.369E 00	-5.889E 02	-5.601E 02	-3.252E 02	-2.349E 02	1.444E 03	2.602E 02	4.023E-02	1.538E 01	2.379E-03
4.270E 01	4.013E 01	2.369E 00	-5.904E 02	-5.615E 02	-3.258E 02	-2.357E 02	1.445E 03	2.605E 02	4.029E-02	1.538E 01	2.378E-03
4.277E 01	4.050E 01	2.366E 00	-6.002E 02	-5.703E 02	-3.297E 02	-2.407E 02	1.452E 03	2.630E 02	4.067E-02	1.536E 01	2.375E-03
4.431E 01	4.938E 01	2.598E 01	-7.540E 02	-7.737E 02	-3.969E 02	-3.768E 02	1.638E 03	3.206E 02	4.958E-02	1.687E 02	2.608E-02
4.480E 01	5.220E 01	3.349E 01	-7.868E 02	-8.341E 02	-4.089E 02	-4.252E 02	1.698E 03	3.389E 02	5.241E-02	2.174E 02	3.362E-02
4.549E 01	4.427E 01	4.404E 01	-8.065E 02	-9.162E 02	-4.227E 02	-4.934E 02	1.782E 03	2.874E 02	4.445E-02	2.859E 02	4.422E-02
4.620E 01	3.604E 01	3.821E 01	-7.753E 02	-9.964E 02	-4.367E 02	-5.597E 02	1.869E 03	2.340E 02	3.619E-02	2.481E 02	3.837E-02
4.626E 01	3.540E 01	3.776E 01	-7.718E 02	-1.002E 03	-4.378E 02	-5.645E 02	1.876E 03	2.298E 02	3.554E-02	2.451E 02	3.791E-02
4.731E 01	2.331E 01	2.920E 01	-6.928E 02	-1.105E 03	-4.575E 02	-6.474E 02	2.006E 03	1.514E 02	2.341E-02	1.895E 02	2.931E-02
4.811E 01	1.780E 01	2.267E 01	-6.223E 02	-1.178E 03	-4.721E 02	-7.057E 02	2.105E 03	1.156E 02	1.787E-02	1.472E 02	2.276E-02
4.873E 01	1.762E 01	1.762E 01	-5.641E 02	-1.234E 03	-4.830E 02	-7.510E 02	2.182E 03	1.144E 02	1.770E-02	1.144E 02	1.770E-02
5.018E 01	1.296E 01	1.296E 01	-4.498E 02	-1.342E 03	-5.076E 02	-8.348E 02	2.363E 03	8.416E 01	1.301E-02	8.416E 01	1.301E-02
5.071E 01	1.126E 01	1.126E 01	-4.163E 02	-1.370E 03	-5.162E 02	-8.542E 02	2.430E 03	7.309E 01	1.130E-02	7.309E 01	1.130E-02
5.212E 01	9.575E 00	9.575E 00	-3.393E 02	-1.433E 03	-5.381E 02	-8.948E 02	2.607E 03	6.216E 01	9.613E-03	6.216E 01	9.613E-03
5.422E 01	4.450E 00	4.450E 00	-2.621E 02	-1.513E 03	-5.682E 02	-9.447E 02	2.873E 03	2.889E 01	4.468E-03	2.889E 01	4.468E-03
5.472E 01	4.750E 00	4.750E 00	-2.502E 02	-1.530E 03	-5.749E 02	-9.551E 02	2.937E 03	3.084E 01	4.769E-03	3.084E 01	4.769E-03
5.547E 01	3.906E 00	3.906E 00	-2.334E 02	-1.554E 03	-5.846E 02	-9.692E 02	3.033E 03	2.536E 01	3.921E-03	2.536E 01	3.921E-03
5.576E 01	3.578E 00	3.576E 00	-2.278E 02	-1.562E 03	-5.883E 02	-9.740E 02	3.070E 03	2.323E 01	3.592E-03	2.323E 01	3.592E-03
5.623E 01	2.156E 00	3.050E 00	-1.857E 02	-1.575E 03	-5.938E 02	-9.811E 02	3.102E 03	1.400E 01	2.165E-03	1.980E 01	3.062E-03
5.765E 01	1.377E 00	1.377E 00	-1.699E 02	-1.605E 03	-6.083E 02	-9.968E 02	3.210E 03	8.938E 00	1.382E-03	8.938E 00	1.382E-03
5.771E 01	3.575E 00	1.312E 00	-1.696E 02	-1.606E 03	-6.088E 02	-9.973E 02	3.217E 03	2.321E 01	3.589E-03	8.519E 00	1.317E-03
5.785E 01	3.575E 00	1.148E 00	-1.688E 02	-1.609E 03	-6.102E 02	-9.984E 02	3.234E 03	2.321E 01	3.589E-03	7.451E 00	1.152E-03
5.793E 01	1.054E 00	1.054E 00	-1.683E 02	-1.610E 03	-6.109E 02	-9.990E 02	3.245E 03	6.842E 00	1.058E-03	6.842E 00	1.058E-03
5.821E 01	7.250E-01	7.250E-01	-1.672E 02	-1.615E 03	-6.135E 02	-1.001E 03	3.280E 03	4.707E 00	7.279E-04	4.707E 00	7.279E-04
5.843E 01	9.272E-01	9.272E-01	-1.664E 02	-1.618E 03	-6.156E 02	-1.003E 03	3.309E 03	6.020E 00	9.310E-04	6.020E 00	9.310E-04
5.916E 01	1.575E 00	1.575E 00	-1.630E 02	-1.629E 03	-6.219E 02	-1.007E 03	3.402E 03	1.023E 01	1.581E-03	1.023E 01	1.581E-03
6.018E 01	8.500E-01	8.500E-01	-1.602E 02	-1.642E 03	-6.300E 02	-1.012E 03	3.532E 03	5.519E 00	8.534E-04	5.519E 00	8.534E-04
6.219E 01	3.112E 00	3.112E 00	-1.597E 02	-1.668E 03	-6.439E 02	-1.025E 03	3.790E 03	2.021E 01	3.125E-03	2.021E 01	3.125E-03
6.361E 01	2.756E 00	2.756E 00	-1.597E 02	-1.688E 03	-6.522E 02	-1.035E 03	3.972E 03	1.789E 01	2.767E-03	1.789E 01	2.767E-03
6.607E 01	1.451E 00	1.451E 00	-1.597E 02	-1.722E 03	-6.644E 02	-1.058E 03	4.209E 03	9.422E 00	1.457E-03	9.422E 00	1.457E-03
6.645E 01	6.390E 00	1.252E 00	-1.597E 02	-1.728E 03	-6.661E 02	-1.062E 03	4.337E 03	4.149E 01	6.416E-03	8.129E 00	1.257E-03

XABS	P-IB	P-OH	PDA	QOX	Q-IB	Q-OB	C-WALL	P-IH/PSO	P-IB/PTO	P-OH/PSO	P-OB/PTO
6.649E 01	6.390E 00	1.231E 00	-1.597E 02	-1.728E 03	-6.662E 02	-1.062E 03	4.342E 03	4.149E 01	6.416E-03	7.992E 00	1.236E-03
6.669E 01	6.002E 00	1.125E 00	-1.597E 02	-1.731E 03	-6.671E 02	-1.064E 03	4.368E 03	3.897E 01	6.026E-03	7.304E 00	1.130E-03
6.835E 01	2.780E 00	1.490E 00	-1.319E 02	-1.756E 03	-6.750E 02	-1.081E 03	4.584E 03	1.805E 01	2.791E-03	9.674E 00	1.496E-03
6.902E 01	2.398E 00	2.910E 00	-8.339E 01	-1.767E 03	-6.786E 02	-1.089E 03	4.665E 03	1.557E 01	2.408E-03	1.889E 01	2.922E-03
6.979E 01	1.960E 00	2.187E 00	-1.828E 01	-1.780E 03	-6.829E 02	-1.097E 03	4.760E 03	1.273E 01	1.968E-03	1.420E 01	2.195E-03
7.051E 01	1.451E 00	1.510E 00	2.801E 01	-1.793E 03	-6.871E 02	-1.106E 03	4.848E 03	9.421E 00	1.457E-03	9.804E 00	1.516E-03
7.112E 01	1.020E 00	1.404E 00	5.721E 01	-1.802E 03	-6.907E 02	-1.112E 03	4.922E 03	6.622E 00	1.024E-03	9.117E 00	1.410E-03
7.250E 01	8.100E-01	1.165E 00	1.071E 02	-1.819E 03	-6.990E 02	-1.120E 03	5.088E 03	5.259E 00	8.133E-04	7.565E 00	1.170E-03
7.403E 01	6.757E-01	9.000E-01	1.488E 02	-1.835E 03	-7.069E 02	-1.129E 03	5.273E 03	4.387E 00	6.784E-04	5.843E 00	9.036E-04
7.493E 01	5.967E-01	2.350E-01	1.716E 02	-1.848E 03	-7.104E 02	-1.137E 03	5.372E 03	3.874E 00	5.991E-04	1.526E 00	2.359E-04
7.493E 01	5.964E-01	2.320E-01	1.721E 02	-1.848E 03	-7.104E 02	-1.137E 03	5.372E 03	3.872E 00	5.988E-04	1.506E 00	2.330E-04
7.626E 01	4.800E-01	0.000	1.834E 02	-1.868E 03	-7.145E 02	-1.153E 03	5.424E 03	3.116E 00	4.819E-04	0.000	0.000
7.911E 01	3.150E-01	0.000	1.993E 02	-1.873E 03	-7.202E 02	-1.153E 03	5.523E 03	2.045E 00	3.163E-04	0.000	0.000
8.301E 01	2.250E-01	0.000	2.109E 02	-1.877E 03	-7.236E 02	-1.153E 03	5.627E 03	1.461E 00	2.259E-04	0.000	0.000
8.582E 01	2.600E-01	0.000	2.163E 02	-1.878E 03	-7.250E 02	-1.153E 03	5.682E 03	1.688E 00	2.610E-04	0.000	0.000
8.868E 01	3.250E-01	0.000	2.233E 02	-1.881E 03	-7.277E 02	-1.153E 03	5.705E 03	2.110E 00	3.263E-04	0.000	0.000
8.868E 01	3.281E-01	0.000	2.233E 02	-1.881E 03	-7.278E 02	-1.153E 03	5.705E 03	2.111E 00	3.264E-04	0.000	0.000

READING = 0091 BLOCK = 79 TIME = 180.151 MACH 7.5 PT = 995.999 TT = 3035.5

X	DDRAG	CDRAG	CF	HC
4.040E 01	9.115E 01	9.115E 01	2.479E-03	3.592E-02
4.041E 01	1.563E-01	9.131E 01	3.066E-03	3.897E-02
4.072E 01	4.811E 00	9.612E 01	2.675E-03	5.130E-02
4.121E 01	7.417E 00	1.035E 02	2.883E-03	3.674E-02
4.150E 01	4.463E 00	1.080E 02	2.735E-03	4.083E-02
4.246E 01	1.315E 01	1.211E 02	2.966E-03	4.733E-02
4.269E 01	3.094E 00	1.242E 02	3.387E-03	4.366E-02
4.270E 01	1.296E-01	1.244E 02	3.107E-03	4.807E-02
4.277E 01	8.110E-01	1.252E 02	3.072E-03	4.870E-02
4.431E 01	1.565E 01	1.408E 02	3.423E-03	4.872E-02
4.480E 01	3.424E 00	1.443E 02	3.545E-03	4.507E-02
4.549E 01	4.448E 00	1.487E 02	4.031E-03	3.581E-02
4.620E 01	4.919E 00	1.536E 02	3.552E-03	4.400E-02
4.626E 01	3.974E-01	1.540E 02	3.474E-03	4.534E-02
4.731E 01	8.103E 00	1.621E 02	3.281E-03	4.431E-02
4.811E 01	6.747E 00	1.689E 02	3.149E-03	4.054E-02
4.873E 01	5.148E 00	1.740E 02	3.065E-03	3.777E-02
5.018E 01	1.100E 01	1.850E 02	2.956E-03	3.108E-02
5.071E 01	3.774E 00	1.888E 02	3.035E-03	2.730E-02
5.212E 01	9.385E 00	1.982E 02	2.944E-03	2.425E-02
5.422E 01	1.274E 01	2.109E 02	2.943E-03	1.387E-02
5.472E 01	2.709E 00	2.136E 02	2.597E-03	1.591E-02
5.547E 01	3.673E 00	2.173E 02	2.619E-03	1.341E-02
5.576E 01	1.387E 00	2.187E 02	2.519E-03	1.286E-02
5.623E 01	1.010E 00	2.197E 02	2.365E-03	9.935E-03
5.765E 01	2.929E 00	2.226E 02	2.329E-03	6.175E-03
5.771E 01	1.801E-01	2.228E 02	2.256E-03	9.580E-03
5.788E 01	4.496E-01	2.233E 02	2.409E-03	8.951E-03
5.793E 01	3.104E-01	2.236E 02	2.998E-03	4.372E-03
5.821E 01	1.119E 00	2.247E 02	2.375E-03	3.813E-03
5.843E 01	7.706E-01	2.255E 02	2.202E-03	4.736E-03
5.916E 01	2.297E 00	2.276E 02	2.164E-03	6.998E-03
6.018E 01	3.186E 00	2.309E 02	2.171E-03	4.424E-03
6.219E 01	6.290E 00	2.372E 02	2.263E-03	1.118E-02
6.361E 01	4.790E 00	2.420E 02	2.580E-03	9.387E-03
6.607E 01	8.827E 00	2.508E 02	2.466E-03	6.068E-03
6.645E 01	1.190E 00	2.520E 02	2.452E-03	1.226E-02
6.649E 01	1.244E-01	2.522E 02	2.921E-03	1.067E-02
6.669E 01	6.662E-01	2.528E 02	2.907E-03	1.021E-02
6.835E 01	4.920E 00	2.577E 02	2.796E-03	7.192E-03
6.902E 01	1.731E 00	2.595E 02	2.831E-03	8.340E-03
6.979E 01	1.989E 00	2.615E 02	2.780E-03	7.020E-03
7.051E 01	1.583E 00	2.631E 02	2.713E-03	5.516E-03
7.112E 01	1.145E 00	2.642E 02	2.675E-03	4.768E-03
7.250E 01	2.284E 00	2.665E 02	2.632E-03	4.093E-03
7.403E 01	2.217E 00	2.687E 02	2.583E-03	3.453E-03
7.493E 01	9.225E-01	2.696E 02	2.466E-03	2.142E-03
7.493E 01	1.199E-03	2.696E 02	2.466E-03	2.135E-03
7.626E 01	4.025E-01	2.700E 02	2.486E-03	2.378E-03
7.911E 01	6.979E-01	2.707E 02	2.402E-03	1.725E-03
8.301E 01	5.740E-01	2.713E 02	2.330E-03	1.330E-03
8.582E 01	2.769E-01	2.716E 02	2.342E-03	1.474E-03
8.868E 01	1.299E-01	2.717E 02	2.369E-03	1.734E-03
8.868E 01	0.000	2.717E 02	2.369E-03	1.735E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-57.	(LBF)
MEASURED THRUST	338.	(LBF)
CALCULATED SPECIFIC IMPULSE	-262.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	1563.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.0390	
MEASURED THRUST COEFFICIENT	0.2325	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	2722.	(LBF)
NET THRUST	44.	(LBF)
SPECIFIC IMPULSE	203.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.0302	

MOMENTUM AND FORCES

INLET FRICTION DRAG	91.2	(LBF)
INLET MOMENTUM CHANGE	-489.2	(LBF)
COMBUSTOR FRICTION DRAG	160.9	(LBF)
COMBUSTOR STRUT DRAG	8.35	(LBF)
COMBUSTOR MOMENTUM CHANGE	39.	(LBF)
NOZZLE FRICTION DRAG	19.66	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	363.	(LBF)
NOZZLE PRESSURE INTEGRAL	383.	(LBF)
EXTERNAL FRICTION DRAG	39.24	(LBF)
EXTERNAL PRESSURE INTEGRAL	-667.	(LBF)
TOTAL EXTERNAL DRAG	-707.	(LBF)
TOTAL STRUT DRAG	8.35	(LBF)
CAVITY FORCE	-535.	(LBF)
CALCULATED LOAD CELL FORCE	-1299.	(LBF)
MEASURED LOAD CELL FORCE	-903.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7090	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.593	(IN)
NOZZLE SHROUD TRAILING EDGE	74.933	(IN)
NOZZLE PLUG TRAILING EDGE	88.685	(IN)
STRUT LEADING EDGE	57.849	(IN)
STRUT TRAILING EDGE	66.449	(IN)
COMBUSTOR EXIT	66.449	(IN)

INLET

ANGLE OF ATTACK	3.000	(DEGREES)
MASS FLOW RATIO	0.9032	
ADDITIVE DRAG COEFFICIENT	0.0087	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0882	
DELTA PT2	0.0871	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.2023	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.0895	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.6749	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9046	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9204	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8823	
ENTHALPY AT PO - SUPERSONIC	-21.51	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	6.65	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0155
EQUIVALENCE RATIO	0.469
COMBUSTOR EFFICIENCY	0.242
TOTAL PRESSURE RATIO	0.1227
COMBUSTOR EFFECTIVENESS	0.3504
INJECTOR DISCHARGE COEFFICIENTS	0.9390, 0.5954,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9921
NOZZLE COEFFICIENT - CT	0.9408
PROCESS EFFICIENCY	1.0005
KINETIC ENERGY EFFICIENCY	0.9833

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.694	B
1C	44.300	
2A	50.169	
2C	46.250	
3A	55.459	
3B	57.644	
4	46.194	

Reading 91

t = 186.45 sec.

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RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

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                P      T       H            GAMMA  MOLWT SONV  MACH  VEL   S     W/A      W     A/AC   MOMTM   Q     IVAC  PHI ETAC
WIND TUNNEL            1     0   6
 0.000    995.499 3069  690.5( 815) 1.2907 28.956 2608
 0.000      0.154  296  -57.9(  71) 1.3964 28.955  843 7.260 6120 1.814 0.05953 13.781 0.9039   2657  5.661 192.8
SPIKE TIP NS           2     0   7
 0.600     11.212 3069  690.5( 815) 1.2903 28.955 2608
 0.600     10.328 3012  673.4( 798) 1.2922 28.955 2585 0.358  927 2.122 0.05953 13.781 0.9039   2788  0.857 202.3
WIND TUNNEL            3     0   0
 0.000    995.499 3069  690.5( 815) 1.2907 28.956 2608
 0.000      0.167  303  -56.2(  73) 1.3967 28.955  853 7.167 6113 1.814 0.06306 14.599 0.9039   2812  5.990 192.6
SPIKE TIP NS           4     0   0
 0.600     11.212 3069  690.5( 815) 1.2903 28.955 2608
 0.600     10.206 3004  670.9( 796) 1.2924 28.955 2582 0.384  991 2.122 0.06306 14.599 0.9039   2812  0.971 192.6
INLET THROAT           5     0   3
40.400    214.202 2949  654.2( 780) 1.2944 28.955 2560
40.400     11.238 1437  225.4( 354) 1.3516 28.955 1826 2.537 4632 1.908 0.67881 13.781 0.0793   2212 48.862 160.5
INLET UPNRSK           6     0   3
40.400    214.202 2949  654.2( 780) 1.2944 28.955 2560
40.400      9.656 1381  210.8( 340) 1.3548 28.955 1792 2.628 4710 1.908 0.61710 13.781 0.0872   2233 45.174 162.1
INLET DNNRSK           7     0   4
40.400     88.953 2949  654.2( 780) 1.2944 28.955 2560
40.400     76.469 2849  624.1( 750) 1.2976 28.955 2519 0.487 1227 1.968 0.61710 13.781 0.0872   2233 11.767 162.1
COMBUSTOR          0   8     1   3
40.410    214.190 2949  654.1( 780) 1.2944 28.955 2560
40.410     11.235 1437  225.4( 354) 1.3516 28.955 1826 2.537 4632 1.908 0.67872 13.781 0.0793   2212 48.855 160.5
COMBUSTOR          0   9     2   3
40.715    213.515 2941  651.9( 777) 1.2947 28.955 2557
40.715     11.293 1436  225.1( 354) 1.3516 28.955 1825 2.532 4621 1.907 0.68117 13.781 0.0790   2208 48.918 160.2
COMBUSTOR          0  10     3   4
41.205    197.742 2929  648.2( 774) 1.2950 28.955 2552
41.205     11.651 1469  234.0( 363) 1.3497 28.955 1845
                                                           2.467 4552 1.911 0.67639 13.781 0.0795   2187 47.851 158.7
COMBUSTOR          0  11     4   4
41.500    181.246 2922  645.9( 772) 1.2953 28.955 2549
41.500     12.064 1512  245.4( 374) 1.3473 28.955 1870 2.394 4477 1.916 0.66936 13.781 0.0804   2166 46.570 157.2
COMBUSTOR          0  12     5   5
42.460    144.985 2897  638.5( 764) 1.2961 28.955 2539
42.460     12.588 1603  269.8( 399) 1.3425 28.955 1922 2.234 4295 1.929 0.63193 13.781 0.0851   2114 42.182 153.4
COMBUSTOR          0  13     6   5
42.700    139.338 2891  636.7( 763) 1.2962 28.955 2537
42.700     12.655 1618  273.8( 403) 1.3417 28.955 1931 2.207 4261 1.931 0.62453 13.781 0.0862   2105 41.361 152.7
COMBUSTOR          0  14     7   5
42.765    137.753 2889  636.2( 762) 1.2963 28.955 2536
42.765     12.668 1622  274.9( 404) 1.3415 28.955 1933 2.200 4252 1.932 0.62223 13.781 0.0865   2102 41.117 152.5
COMBUSTOR          0  15     8   4
44.310    108.934 2857  626.5( 753) 1.2973 28.955 2523
44.310     12.966 1710  298.8( 428) 1.3373 28.955 1982 2.044 4050 1.945 0.57528 13.781 0.0935   2045 36.207 148.4
COMBUSTOR          0  16     9   3
44.800    102.272 2848  623.9( 750) 1.2976 28.955 2519
44.800     13.303 1743  307.7( 437) 1.3358 28.955 2000 1.989 3978 1.948 0.56885 13.781 0.0946   2026 35.165 147.0
COMBUSTOR          0  17    10   3
45.485     96.339 2836  620.2( 746) 1.2980 28.955 2514
45.485     13.753 1776  316.6( 445) 1.3344 28.955 2017 1.932 3897 1.951 0.56558 13.781 0.0951   2005 34.257 145.5
COMBUSTOR          0  18    11   4
46.200     92.812 2822  615.9( 742) 1.2984 28.955 2508
46.200     13.429 1772  315.6( 444) 1.3346 28.955 2015 1.924 3877 1.952 0.55049 13.781 0.0977   1997 33.165 144.9
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READING # 0091 BLOCK # 86 TIME # 186.451 MACH 7.3 PT # 995.499 TT # 3069.0

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 4														
46.260	92.522	2820	615.5(742)	1.2985	28.955	2508											
46.260	13.340	1770	314.9(444)	1.3347	28.955	2014	1.926	3878	1.952	0.54787	13.781	0.0982	1997	33.022	144.9		
COMBUSTOR	0	20	13 4														
47.310	89.162	2794	607.8(734)	1.2993	28.955	2497											
47.310	11.867	1717	300.5(429)	1.3370	28.955	1985	1.975	3921	1.952	0.50787	13.781	0.1059	2002	30.947	145.2		
COMBUSTOR	0	21	14 4														
48.110	86.980	2773	601.4(728)	1.3000	28.955	2488											
48.110	10.331	1654	283.5(412)	1.3400	28.955	1951	2.044	3988	1.951	0.46679	13.781	0.1153	2013	28.933	146.1		
COMBUSTOR	0	22	15 4														
48.725	84.829	2757	596.5(723)	1.3005	28.955	2481											
48.725	8.922	1593	267.1(396)	1.3430	28.955	1917	2.118	4060	1.951	0.42604	13.781	0.1263	2028	26.882	147.1		
COMBUSTOR	0	23	16 4														
50.175	80.130	2726	587.5(714)	1.3015	28.955	2468											
50.175	6.456	1469	234.0(363)	1.3497	28.955	1845	2.279	4205	1.952	0.34623	13.781	0.1554	2058	22.628	149.4		
COMBUSTOR	0	24	17 4														
50.705	78.169	2719	585.3(712)	1.3017	28.955	2465											
50.705	5.855	1437	225.6(354)	1.3515	28.955	1826	2.323	4242	1.953	0.32381	13.781	0.1662	2066	21.349	149.9		
COMBUSTOR	0	25	18 3														
52.115	74.487	2702	580.5(707)	1.3023	28.955	2458											
52.115	4.617	1359	204.9(334)	1.3562	28.955	1779	2.437	4335	1.954	0.27897	13.781	0.1950	2087	18.591	151.5		
COMBUSTOR	0	26	19 3														
54.215	71.737	2682	574.5(702)	1.3029	28.955	2450											
54.215	3.401	1255	178.0(307)	1.3626	28.955	1714	2.599	4454	1.955	0.22619	13.781	0.2379	2115	15.656	153.5		
COMBUSTOR	0	27	20 3														
54.715	71.048	2678	573.3(700)	1.3031	28.955	2448											
54.715	3.196	1235	173.0(302)	1.3638	28.955	1701	2.631	4476	1.955	0.21695	13.781	0.2480	2120	15.089	153.8		
COMBUSTOR	0	28	21 3														
55.465	70.351	2672	571.6(699)	1.3032	28.955	2445											
55.465	2.921	1206	165.5(294)	1.3656	28.955	1682	2.680	4508	1.955	0.20451	13.781	0.2631	2128	14.327	154.4		
COMBUSTOR	0	29	22 3														
55.760	70.175	2670	571.0(698)	1.3033	28.955	2444											
55.760	2.822	1195	162.6(291)	1.3664	28.955	1674	2.700	4521	1.955	0.20003	13.781	0.2690	2131	14.053	154.6		
COMBUSTOR	0	30	23 3														
56.225	64.323	2667	570.1(697)	1.3034	28.955	2443											
56.225	2.048	1121	143.7(273)	1.3710	28.955	1624	2.844	4619	1.960	0.15821	13.781	0.3401	2157	11.357	156.5		
COMBUSTOR	0	31	24 3														
57.650	65.471	2659	567.7(695)	1.3037	28.955	2440											
57.650	1.789	1071	131.1(260)	1.3742	28.955	1590	2.940	4674	1.958	0.14623	13.781	0.3679	2171	10.621	157.5		
COMBUSTOR	0	32	25 3														
57.705	65.462	2659	567.6(695)	1.3037	28.955	2440											
57.705	1.782	1070	130.8(260)	1.3742	28.955	1589	2.942	4675	1.958	0.14587	13.781	0.3689	2171	10.598	157.5		
COMBUSTOR	0	33	26 2														
57.845	65.285	2658	567.4(695)	1.3037	28.955	2439											
57.845	1.763	1067	130.2(259)	1.3744	28.955	1587	2.947	4677	1.958	0.14477	13.781	0.3717	2171	10.523	157.6		
COMBUSTOR	0	34	27 4														
57.925	66.189	2658	567.3(695)	1.3037	28.955	2439											
57.925	1.780	1066	129.8(259)	1.3745	28.955	1586	2.950	4679	1.957	0.14642	13.781	0.3675	2172	10.646	157.6		
COMBUSTOR	0	35	28 4														
58.205	66.376	2656	566.9(694)	1.3038	28.955	2439											
58.205	1.767	1062	128.9(258)	1.3747	28.955	1584	2.956	4681	1.957	0.14591	13.781	0.3688	2172	10.615	157.6		
COMBUSTOR	0	36	29 4														
58.431	66.544	2655	566.6(694)	1.3038	28.955	2438											
58.431	1.760	1060	128.3(257)	1.3749	28.955	1582	2.960	4683	1.957	0.14569	13.781	0.3693	2172	10.603	157.6		
COMBUSTOR	0	37	30 3														
59.155	66.426	2652	565.7(693)	1.3039	28.955	2437											
59.155	1.717	1052	126.3(255)	1.3754	28.955	1576	2.975	4689	1.957	0.14337	13.781	0.3753	2173	10.448	157.7		

ORIGINAL PAGE IS OF POOR QUALITY

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                P      T      H              GAMMA  MOLWT SONV  MACH  VEL    S     W/A       W      A/AC   MOPTM   G      IVAC  PHI  ETAC
COMBUSTOR        0    38   31    5
60.175      66.249 2649  564.6( 692) 1.3040 28.955 2435
60.175       1.700 1048  125.4( 254) 1.3756 28.955 1573 2.980 4688 1.956 0.14246 13.781 0.3777   2173 10.380 157.7
COMBUSTOR        0    39   32    4
62.185      66.409 2644  563.4( 691) 1.3041 28.955 2433
62.185       1.787 1060  128.3( 257) 1.3749 28.955 1582 2.950 4666 1.956 0.14742 13.781 0.3650   2166 10.689 157.1
COMBUSTOR        0    40   33    4
63.605      66.466 2642  562.7( 690) 1.3042 28.955 2432
63.605       1.861 1070  130.9( 260) 1.3742 28.955 1589 2.925 4648 1.955 0.15141 13.781 0.3553   2160 10.938 156.8
COMBUSTOR        0    41   34    3
66.069      60.367 2638  561.5( 689) 1.3043 28.955 2431
66.069       1.803 1087  135.2( 264) 1.3731 28.955 1601 2.884 4618 1.962 0.14352 13.781 0.3749   2151 10.301 156.1
COMBUSTOR        0    42   35    0
66.445      55.779 2637  561.3( 689) 1.3044 28.955 2430
66.445       1.682 1090  135.8( 265) 1.3730 28.955 1603 2.879 4614 1.967 0.13343 13.781 0.4032   2150  9.567 156.0
NOZZLE   AE           43   36    3
88.681      55.779 2637  561.3( 689) 1.3044 28.955 2430
88.681       0.158  562    6.2( 135) 1.3981 28.955 1162 4.536 5270 1.967 0.02778 13.781 1.9371   2336  2.275 169.5
NOZZLE   PO           44   37    3
88.681      55.779 2637  561.3( 689) 1.3044 28.955 2430
88.681       0.154  558    5.1( 134) 1.3982 28.955 1157 4.558 5275 1.967 0.02726 13.781 1.9739   2337  2.235 169.6
FICTIVE COMBUSTR      62   55    0
66.445     214.202 2637  561.3( 689) 1.3044 28.955 2430
66.445       0.154  380  -37.7(  91) 1.3985 28.955  955 5.730 5475 1.875 0.04152 13.781 1.2960   2396  3.532 173.9
FICTIVE NOZZLE        63   56    0
88.681     310.489 2618  555.7( 683) 1.3050 28.955 2422
88.681       0.073  274  -63.2(  66) 1.3956 28.955  811 6.862 5565 1.847 0.02778 13.781 1.9371   2420  2.402 175.6
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READING = 0091 BLOCK = 86 TIME = 186.451 MACH 7.3 PT = 995.499 TT = 3069.0

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.708E-01	0.000	0.000	0.000	2.470E-02	4.485E 00	6.931E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.485E 00	6.931E-04	0.000	0.000
3.070E 01	1.515E 00	0.000	-1.123E 02	0.000	0.000	0.000	5.053E 02	9.848E 00	1.522E-03	0.000	0.000
3.508E 01	1.987E 00	0.000	-2.258E 02	0.000	0.000	0.000	6.804E 02	1.292E 01	1.996E-03	0.000	0.000
3.555E 01	2.195E 00	0.000	-2.449E 02	0.000	0.000	0.000	7.013E 02	1.427E 01	2.205E-03	0.000	0.000
3.606E 01	2.485E 00	0.000	-2.687E 02	-2.300E 02	-2.300E 02	0.000	7.246E 02	1.615E 01	2.496E-03	0.000	0.000
3.648E 01	2.262E 00	0.000	-2.890E 02	-2.355E 02	-2.355E 02	0.000	7.443E 02	1.470E 01	2.272E-03	0.000	0.000
3.658E 01	2.335E 00	3.188E 00	-3.269E 02	-2.369E 02	-2.369E 02	0.000	7.491E 02	1.518E 01	2.346E-03	2.072E 01	3.202E-03
3.659E 01	2.340E 00	3.215E 00	-3.270E 02	-2.370E 02	-2.370E 02	0.000	7.494E 02	1.521E 01	2.350E-03	2.090E 01	3.230E-03
3.701E 01	2.640E 00	5.141E 00	-3.285E 02	-2.429E 02	-2.429E 02	0.000	7.931E 02	1.716E 01	2.652E-03	3.342E 01	5.165E-03
3.725E 01	2.543E 00	6.262E 00	-3.268E 02	-2.464E 02	-2.464E 02	0.000	8.188E 02	1.653E 01	2.554E-03	4.071E 01	6.291E-03
3.803E 01	2.235E 00	8.867E 00	-3.070E 02	-2.582E 02	-2.582E 02	0.000	9.020E 02	1.453E 01	2.245E-03	5.764E 01	8.907E-03
3.871E 01	7.551E 00	1.117E 01	-3.111E 02	-3.420E 02	-2.709E 02	-7.115E 01	9.785E 02	4.908E 01	7.585E-03	7.260E 01	1.122E-02
3.875E 01	7.823E 00	1.105E 01	-3.121E 02	-3.451E 02	-2.716E 02	-7.345E 01	9.825E 02	5.085E 01	7.858E-03	7.185E 01	1.110E-02
3.901E 01	9.840E 00	1.020E 01	-3.214E 02	-3.680E 02	-2.775E 02	-9.054E 01	1.012E 03	6.396E 01	9.884E-03	6.632E 01	1.025E-02
3.950E 01	1.375E 01	8.600E 00	-3.489E 02	-4.128E 02	-2.902E 02	-1.227E 02	1.068E 03	8.941E 01	1.382E-02	5.590E 01	8.639E-03
3.974E 01	1.197E 01	7.831E 00	-3.613E 02	-4.351E 02	-2.971E 02	-1.380E 02	1.095E 03	7.779E 01	1.202E-02	5.090E 01	7.867E-03
4.000E 01	9.953E 00	9.893E 00	-3.675E 02	-4.610E 02	-3.057E 02	-1.553E 02	1.126E 03	6.470E 01	9.998E-03	6.431E 01	9.938E-03
4.021E 01	1.055E 01	1.149E 01	-3.689E 02	-4.814E 02	-3.127E 02	-1.686E 02	1.150E 03	6.858E 01	1.060E-02	7.467E 01	1.154E-02
4.040E 01	1.112E 01	1.182E 01	-3.690E 02	-5.010E 02	-3.197E 02	-1.813E 02	1.172E 03	7.228E 01	1.117E-02	7.681E 01	1.187E-02
4.041E 01	1.115E 01	1.183E 01	-3.690E 02	-5.020E 02	-3.200E 02	-1.820E 02	1.174E 03	7.246E 01	1.120E-02	7.692E 01	1.189E-02
4.071E 01	1.204E 01	1.235E 01	-3.689E 02	-5.331E 02	-3.314E 02	-2.017E 02	1.209E 03	7.824E 01	1.209E-02	8.028E 01	1.241E-02
4.121E 01	1.347E 01	2.462E 00	-3.826E 02	-5.841E 02	-3.510E 02	-2.331E 02	1.267E 03	8.753E 01	1.353E-02	1.601E 01	2.474E-03
4.150E 01	1.432E 01	2.455E 00	-3.997E 02	-6.153E 02	-3.637E 02	-2.515E 02	1.302E 03	9.312E 01	1.439E-02	1.596E 01	2.467E-03
4.246E 01	9.250E 00	2.432E 00	-4.383E 02	-7.176E 02	-4.088E 02	-3.088E 02	1.416E 03	6.013E 01	9.292E-03	1.581E 01	2.443E-03
4.270E 01	9.978E 00	2.427E 00	-4.449E 02	-7.423E 02	-4.206E 02	-3.217E 02	1.444E 03	6.486E 01	1.002E-02	1.577E 01	2.438E-03
4.276E 01	1.018E 01	2.425E 00	-4.467E 02	-7.488E 02	-4.239E 02	-3.249E 02	1.452E 03	6.614E 01	1.022E-02	1.576E 01	2.436E-03
4.431E 01	1.486E 01	7.019E 00	-4.838E 02	-8.822E 02	-4.999E 02	-3.823E 02	1.638E 03	9.661E 01	1.493E-02	4.562E 01	7.050E-03
4.480E 01	1.635E 01	8.476E 00	-4.970E 02	-9.188E 02	-5.239E 02	-3.949E 02	1.698E 03	1.063E 02	1.642E-02	5.509E 01	8.514E-03
4.549E 01	1.400E 01	1.051E 01	-5.104E 02	-9.693E 02	-5.567E 02	-4.126E 02	1.782E 03	9.102E 01	1.407E-02	6.833E 01	1.056E-02
4.620E 01	1.155E 01	9.671E 00	-5.098E 02	-1.028E 03	-5.897E 02	-4.384E 02	1.869E 03	7.510E 01	1.161E-02	6.286E 01	9.715E-03
4.626E 01	1.135E 01	9.601E 00	-5.090E 02	-1.034E 03	-5.924E 02	-4.412E 02	1.877E 03	7.376E 01	1.140E-02	6.241E 01	9.644E-03
4.731E 01	7.750E 00	8.365E 00	-4.927E 02	-1.141E 03	-6.382E 02	-5.025E 02	2.006E 03	5.038E 01	7.785E-03	5.437E 01	8.403E-03
4.811E 01	6.425E 00	7.424E 00	-4.726E 02	-1.229E 03	-6.712E 02	-5.575E 02	2.105E 03	4.176E 01	6.454E-03	4.826E 01	7.457E-03
4.872E 01	6.700E 00	6.700E 00	-4.524E 02	-1.295E 03	-6.955E 02	-5.999E 02	2.182E 03	4.355E 01	6.730E-03	4.355E 01	6.730E-03
5.017E 01	4.668E 00	4.668E 00	-4.099E 02	-1.420E 03	-7.489E 02	-6.715E 02	2.363E 03	3.034E 01	4.689E-03	3.034E 01	4.689E-03
5.071E 01	3.925E 00	3.925E 00	-3.980E 02	-1.451E 03	-7.671E 02	-6.835E 02	2.429E 03	2.551E 01	3.943E-03	2.551E 01	3.943E-03
5.211E 01	4.175E 00	4.175E 00	-3.681E 02	-1.517E 03	-8.121E 02	-7.050E 02	2.607E 03	2.714E 01	4.194E-03	2.714E 01	4.194E-03
5.421E 01	2.900E 00	2.900E 00	-3.291E 02	-1.600E 03	-8.699E 02	-7.299E 02	2.873E 03	1.885E 01	2.913E-03	1.885E 01	2.913E-03
5.471E 01	2.792E 00	2.792E 00	-3.217E 02	-1.616E 03	-8.820E 02	-7.342E 02	2.937E 03	1.815E 01	2.804E-03	1.815E 01	2.804E-03
5.546E 01	2.870E 00	2.870E 00	-3.108E 02	-1.639E 03	-8.991E 02	-7.401E 02	3.033E 03	1.866E 01	2.883E-03	1.866E 01	2.883E-03
5.576E 01	2.901E 00	2.901E 00	-3.064E 02	-1.648E 03	-9.054E 02	-7.423E 02	3.070E 03	1.886E 01	2.914E-03	1.886E 01	2.914E-03
5.622E 01	1.275E 00	2.950E 00	-2.793E 02	-1.660E 03	-9.148E 02	-7.455E 02	3.102E 03	8.288E 00	1.281E-03	1.918E 01	2.963E-03
5.765E 01	1.583E 00	1.583E 00	-2.631E 02	-1.693E 03	-9.395E 02	-7.536E 02	3.210E 03	1.029E 01	1.590E-03	1.029E 01	1.590E-03
5.771E 01	1.825E 00	1.530E 00	-2.627E 02	-1.694E 03	-9.404E 02	-7.539E 02	3.217E 03	1.186E 01	1.833E-03	9.944E 00	1.537E-03
5.785E 01	1.825E 00	1.395E 00	-2.617E 02	-1.697E 03	-9.425E 02	-7.545E 02	3.234E 03	1.186E 01	1.833E-03	9.071E 00	1.402E-03
5.792E 01	1.319E 00	1.319E 00	-2.612E 02	-1.699E 03	-9.437E 02	-7.549E 02	3.245E 03	8.572E 00	1.325E-03	8.572E 00	1.325E-03
5.821E 01	1.050E 00	1.050E 00	-2.596E 02	-1.704E 03	-9.477E 02	-7.563E 02	3.280E 03	6.825E 00	1.055E-03	6.825E 00	1.055E-03
5.843E 01	1.175E 00	1.175E 00	-2.586E 02	-1.708E 03	-9.508E 02	-7.573E 02	3.309E 03	7.637E 00	1.180E-03	7.637E 00	1.180E-03
5.915E 01	1.575E 00	1.575E 00	-2.548E 02	-1.721E 03	-9.599E 02	-7.607E 02	3.402E 03	1.024E 01	1.582E-03	1.024E 01	1.582E-03
6.017E 01	8.500E-01	8.500E-01	-2.520E 02	-1.735E 03	-9.703E 02	-7.648E 02	3.532E 03	5.525E 00	8.538E-04	5.525E 00	8.538E-04
6.218E 01	1.175E 00	1.175E 00	-2.518E 02	-1.753E 03	-9.844E 02	-7.682E 02	3.790E 03	7.638E 00	1.180E-03	7.638E 00	1.180E-03
6.360E 01	1.500E 00	1.500E 00	-2.518E 02	-1.762E 03	-9.914E 02	-7.701E 02	3.972E 03	9.750E 00	1.507E-03	9.750E 00	1.507E-03
6.607E 01	1.746E 00	1.746E 00	-2.518E 02	-1.779E 03	-1.003E 03	-7.757E 02	4.289E 03	1.135E 01	1.754E-03	1.135E 01	1.754E-03
6.644E 01	1.580E 00	1.784E 00	-2.518E 02	-1.782E 03	-1.005E 03	-7.767E 02	4.337E 03	1.027E 01	1.587E-03	1.159E 01	1.792E-03
6.649E 01	1.580E 00	1.788E 00	-2.518E 02	-1.782E 03	-1.005E 03	-7.768E 02	4.342E 03	1.027E 01	1.587E-03	1.162E 01	1.796E-03

READING = 0891 BLOCK = 86 TIME = 186.451 MACH 7.3 PT = 995.499 TT = 3069.0

XABS	P-IB	P-OB	PDA	QUX	Q-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.668E 01	1.574E 00	1.607E 00	-2.518E 02	-1.763E 03	-1.006E 03	-7.774E 02	4.368E 03	1.023E 01	1.581E-03	1.175E 01	1.816E-03
6.839E 01	1.520E 00	2.255E 00	-2.513E 02	-1.796E 03	-1.014E 03	-7.824E 02	4.584E 03	9.880E 00	1.527E-03	1.466E 01	2.265E-03
6.901E 01	1.276E 00	1.852E 00	-1.964E 02	-1.801E 03	-1.017E 03	-7.843E 02	4.665E 03	8.292E 00	1.281E-03	1.204E 01	1.861E-03
6.978E 01	9.950E-01	1.497E 00	-1.584E 02	-1.808E 03	-1.020E 03	-7.877E 02	4.760E 03	6.468E 00	9.995E-04	9.732E 00	1.504E-03
7.050E 01	8.515E-01	1.165E 00	-1.296E 02	-1.817E 03	-1.023E 03	-7.934E 02	4.848E 03	5.535E 00	8.554E-04	7.573E 00	1.170E-03
7.111E 01	7.300E-01	1.097E 00	-1.090E 02	-1.824E 03	-1.026E 03	-7.986E 02	4.922E 03	4.745E 00	7.333E-04	7.133E 00	1.102E-03
7.249E 01	6.250E-01	9.445E-01	-7.073E 01	-1.836E 03	-1.032E 03	-8.045E 02	5.088E 03	4.063E 00	6.278E-04	6.140E 00	9.488E-04
7.402E 01	5.741E-01	7.750E-01	-3.654E 01	-1.842E 03	-1.037E 03	-8.047E 02	5.273E 03	3.732E 00	5.767E-04	5.038E 00	7.785E-04
7.492E 01	5.442E-01	2.300E-01	-1.640E 01	-1.843E 03	-1.040E 03	-8.032E 02	5.372E 03	3.537E 00	5.467E-04	1.495E 00	2.310E-04
7.493E 01	5.441E-01	2.276E-01	-1.594E 01	-1.843E 03	-1.040E 03	-8.032E 02	5.372E 03	3.537E 00	5.465E-04	1.479E 00	2.286E-04
7.625E 01	5.000E-01	0.000	-4.915E 00	-1.843E 03	-1.043E 03	-8.004E 02	5.424E 03	3.250E 00	5.023E-04	0.000	0.000
7.910E 01	3.400E-01	0.000	1.188E 01	-1.848E 03	-1.047E 03	-8.004E 02	5.523E 03	2.210E 00	3.415E-04	0.000	0.000
8.300E 01	2.300E-01	0.000	2.406E 01	-1.851E 03	-1.051E 03	-8.004E 02	5.627E 03	1.495E 00	2.310E-04	0.000	0.000
8.581E 01	2.700E-01	0.000	2.962E 01	-1.854E 03	-1.053E 03	-8.004E 02	5.682E 03	1.755E 00	2.712E-04	0.000	0.000
8.867E 01	3.650E-01	0.000	3.728E 01	-1.858E 03	-1.058E 03	-8.004E 02	5.705E 03	2.373E 00	3.667E-04	0.000	0.000
8.868E 01	3.652E-01	0.000	3.728E 01	-1.858E 03	-1.058E 03	-8.004E 02	5.705E 03	2.374E 00	3.669E-04	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	9.213E 01	9.213E 01	2.448E-03	3.487E-02
4.041E 01	1.403E-01	9.227E 01	2.448E-03	3.488E-02
4.071E 01	4.275E 00	9.654E 01	2.450E-03	3.503E-02
4.121E 01	6.885E 00	1.034E 02	2.491E-03	3.550E-02
4.150E 01	4.133E 00	1.076E 02	2.537E-03	3.595E-02
4.246E 01	1.311E 01	1.207E 02	2.641E-03	3.568E-02
4.270E 01	3.173E 00	1.238E 02	2.660E-03	3.556E-02
4.276E 01	8.552E-01	1.247E 02	2.665E-03	3.552E-02
4.431E 01	1.955E 01	1.443E 02	2.768E-03	3.459E-02
4.480E 01	5.922E 00	1.502E 02	2.803E-03	3.454E-02
4.549E 01	8.184E 00	1.584E 02	2.839E-03	3.409E-02
4.620E 01	8.384E 00	1.667E 02	2.840E-03	3.398E-02
4.626E 01	6.904E-01	1.674E 02	2.838E-03	3.379E-02
4.731E 01	1.168E 01	1.791E 02	2.801E-03	3.077E-02
4.811E 01	8.245E 00	1.874E 02	2.755E-03	2.765E-02
4.872E 01	5.832E 00	1.932E 02	2.706E-03	2.463E-02
5.017E 01	1.192E 01	2.051E 02	2.608E-03	1.901E-02
5.071E 01	3.794E 00	2.089E 02	2.583E-03	1.753E-02
5.211E 01	9.028E 00	2.179E 02	2.510E-03	1.438E-02
5.421E 01	1.122E 01	2.291E 02	2.409E-03	1.117E-02
5.471E 01	2.351E 00	2.315E 02	2.390E-03	1.060E-02
5.546E 01	3.347E 00	2.348E 02	2.361E-03	9.839E-03
5.576E 01	1.262E 00	2.361E 02	2.349E-03	9.564E-03
5.622E 01	9.174E-01	2.370E 02	2.256E-03	7.204E-03
5.765E 01	2.638E 00	2.397E 02	2.202E-03	6.450E-03
5.771E 01	1.645E-01	2.398E 02	2.201E-03	6.436E-03
5.785E 01	4.128E-01	2.402E 02	2.198E-03	6.378E-03
5.792E 01	2.378E-01	2.405E 02	2.191E-03	6.427E-03
5.821E 01	8.296E-01	2.413E 02	2.184E-03	6.380E-03
5.843E 01	6.674E-01	2.420E 02	2.179E-03	6.354E-03
5.915E 01	2.119E 00	2.441E 02	2.167E-03	6.214E-03
6.017E 01	2.945E 00	2.470E 02	2.160E-03	6.146E-03
6.218E 01	5.875E 00	2.529E 02	2.165E-03	6.381E-03
6.360E 01	4.269E 00	2.572E 02	2.169E-03	6.571E-03
6.607E 01	7.351E 00	2.645E 02	2.211E-03	6.368E-03
6.644E 01	1.066E 00	2.656E 02	2.240E-03	6.001E-03
6.649E 01	1.094E-01	2.657E 02	2.214E-03	5.933E-03
6.668E 01	5.444E-01	2.662E 02	2.213E-03	5.947E-03
6.835E 01	4.740E 00	2.710E 02	2.225E-03	6.437E-03
6.901E 01	1.748E 00	2.727E 02	2.188E-03	5.579E-03
6.978E 01	1.772E 00	2.745E 02	2.142E-03	4.687E-03
7.050E 01	1.420E 00	2.759E 02	2.100E-03	3.983E-03
7.111E 01	1.076E 00	2.770E 02	2.081E-03	3.693E-03
7.249E 01	2.221E 00	2.792E 02	2.051E-03	3.282E-03
7.402E 01	2.214E 00	2.814E 02	2.020E-03	2.917E-03
7.492E 01	9.484E-01	2.824E 02	1.926E-03	1.909E-03
7.493E 01	1.251E-03	2.824E 02	1.925E-03	1.904E-03
7.625E 01	4.389E-01	2.828E 02	1.963E-03	2.313E-03
7.910E 01	7.948E-01	2.836E 02	1.891E-03	1.715E-03
8.300E 01	6.418E-01	2.843E 02	1.819E-03	1.265E-03
8.581E 01	3.036E-01	2.846E 02	1.834E-03	1.422E-03
8.867E 01	1.486E-01	2.847E 02	1.872E-03	1.779E-03
8.868E 01	0.000	2.847E 02	1.871E-03	1.780E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	=253.	(LBF)
MEASURED THRUST	=318.	(LBF)
CALCULATED SPECIFIC IMPULSE	=253.	(LBF=SEC/LBM)
MEASURED SPECIFIC IMPULSE	=318.	(LBF=SEC/LBM)
CALCULATED THRUST COEFFICIENT	=.1747	
MEASURED THRUST COEFFICIENT	=.2195	

REGENERATIVE=COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	0.	(LBF)
NET THRUST	0.	(LBF)
SPECIFIC IMPULSE	0.	(LBF=SEC/LBM)
THRUST COEFFICIENT	0.0000	

MOMENTUM AND FORCES

INLET FRICTION DRAG	92.1	(LBF)
INLET MOMENTUM CHANGE	=461.2	(LBF)
COMBUSTOR FRICTION DRAG	173.5	(LBF)
COMBUSTOR STRUT DRAG	5.92	(LBF)
COMBUSTOR MOMENTUM CHANGE	=62.	(LBF)
NOZZLE FRICTION DRAG	19.12	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	270.	(LBF)
NOZZLE PRESSURE INTEGRAL	289.	(LBF)
EXTERNAL FRICTION DRAG	41.51	(LBF)
EXTERNAL PRESSURE INTEGRAL	=641.	(LBF)
TOTAL EXTERNAL DRAG	=682.	(LBF)
TOTAL STRUT DRAG	5.92	(LBF)
CAVITY FORCE	=544.	(LBF)
CALCULATED LOAD CELL FORCE	=1480.	(LBF)
MEASURED LOAD CELL FORCE	=1543.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE		

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7050	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.589	(IN)
NOZZLE SHROUD TRAILING EDGE	74.929	(IN)
NOZZLE PLUG TRAILING EDGE	88.681	(IN)
STRUT LEADING EDGE	57.845	(IN)
STRUT TRAILING EDGE	66.445	(IN)
COMBUSTOR EXIT	66.445	(IN)

INLET

ANGLE OF ATTACK	3.000	(DEGREES)
MASS FLOW RATIO	0.9039	
ADDITIVE DRAG COEFFICIENT	0.0087	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0881	
DELTA PT2	0.0849	(PSI)
TOTAL PRESSURE RECOVERY = SUPERSONIC	0.2152	
TOTAL PRESSURE RECOVERY = SUBSONIC	0.0894	
INLET PROCESS EFFICIENCY = SUPERSONIC	0.8808	
INLET PROCESS EFFICIENCY = SUBSONIC	0.9066	
KINETIC ENERGY EFFICIENCY = SUPERSONIC	0.9063	
KINETIC ENERGY EFFICIENCY = SUBSONIC	0.8663	
ENTHALPY AT PO = SUPERSONIC	=24.11	(BTU/LBM)
ENTHALPY AT PO = SUBSONIC	5.81	(BTU/LBM)

COMBUSTOR

FUEL=AIR RATIO	0.0000
EQUIVALENCE RATIO	0.000
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.2604
COMBUSTOR EFFECTIVENESS	0.6813
INJECTOR DISCHARGE COEFFICIENTS	

NOZZLE

VACUUM STREAM THRUST COEFFICIENT = CS	1.0360
NOZZLE COEFFICIENT = CT	1.0027
PROCESS EFFICIENCY	1.2726
KINETIC ENERGY EFFICIENCY	1.0637

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.690	
1C	44.300	
2A	50.165	
2C	46.250	
3A	55.455	
3B	57.640	
4	46.190	

Reading 91

t = 190.05 sec.

READING = 0091 BLOCK = 90 TIME = 190.051 MACH 7.3 PT = 995.749 TT = 3071.8 2-13-75

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOPTP	Q	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6														
0.000	995.749	3072	691.4(816)	1.2906	28.956	2609											
0.000	0.184	297	-57.8(71)	1.3964	28.955	843	7.259	6123	1.815	0.05950	13.780	0.9042	2658	5.662	192.9		
SPIKE TIP NS		2	0 7														
0.600	11.187	3072	691.4(816)	1.2902	28.955	2609											
0.600	10.300	3015	674.1(799)	1.2921	28.955	2586	0.359	929	2.123	0.05950	13.780	0.9042	2764	0.859	202.0		
WIND TUNNEL		3	0 0														
0.000	995.749	3072	691.4(816)	1.2906	28.956	2609											
0.000	0.166	303	-56.2(73)	1.3967	28.955	853	7.170	6116	1.815	0.06288	14.563	0.9042	2807	5.977	192.7		
SPIKE TIP NS		4	0 0														
0.600	11.187	3072	691.4(816)	1.2902	28.955	2609											
0.600	10.183	3007	671.8(797)	1.2923	28.955	2583	0.364	991	2.123	0.06288	14.563	0.9042	2807	0.966	192.7		
INLET THROAT		5	0 5														
40.400	173.110	2995	667.9(793)	1.2930	28.955	2578											
40.400	13.011	1604	269.9(399)	1.3425	28.955	1923	2.321	4463	1.927	0.67836	13.780	0.0793	2176	47.046	157.9		
INLET UPNRSK		6	0 3														
40.400	173.110	2995	667.9(793)	1.2930	28.955	2578											
40.400	11.133	1541	253.1(382)	1.3457	28.955	1887	2.414	4556	1.927	0.61669	13.780	0.0872	2200	43.663	159.7		
INLET DNNRSK		7	0 4														
40.400	86.948	2995	667.9(793)	1.2930	28.955	2578											
40.400	73.709	2885	634.8(761)	1.2964	28.955	2534	0.508	1287	1.974	0.61669	13.780	0.0872	2200	12.330	159.7		
COMBUSTOR	0	8	1 5														
40.410	119.397	3032	678.4(885)	1.2928	26.246	2725											
40.410	19.089	1961	336.2(547)	1.3293	26.247	2222	1.862	4138	2.126	0.68404	13.897	0.0793	2175	43.994	156.5	0.26	0.16
COMBUSTOR	0	9	2 4														
40.713	107.746	3143	676.4(920)	1.2874	26.372	2762											
40.713	21.957	2169	360.9(609)	1.3203	26.373	2323	1.710	3973	2.142	0.68655	13.897	0.0790	2161	42.390	155.5	0.26	0.25
COMBUSTOR	0	10	3 7														
41.203	111.787	2848	672.8(828)	1.3011	26.071	2658											
41.203	18.860	1853	357.9(516)	1.3353	26.070	2172	1.828	3969	2.115	0.68168	13.897	0.0796	2099	42.046	151.0	0.26	0.04
COMBUSTOR	0	11	4 2														
41.500	95.374	2856	670.6(831)	1.3006	26.086	2661											
41.500	21.721	2003	399.0(562)	1.3295	26.086	2253	1.636	3686	2.128	0.67461	13.897	0.0804	2040	38.644	146.8	0.26	0.05
COMBUSTOR	0	12	5 21														
42.460	65.116	2778	662.7(806)	1.3039	26.030	2630											
42.460	23.071	2168	467.6(613)	1.3242	26.030	2342	1.334	3124	2.149	0.63726	13.897	0.0851	1853	30.941	133.3	0.26	0.01
COMBUSTOR	0	13	6 21														
42.688	55.624	2713	670.0(856)	1.3083	23.806	2722											
42.688	23.572	2206	494.2(682)	1.3254	23.806	2471	1.200	2965	2.311	0.63571	14.011	0.0861	1811	29.296	129.2	0.51	0.04
COMBUSTOR	0	14	7 21														
42.698	56.943	2633	669.9(830)	1.3119	23.733	2690											
42.698	23.594	2126	494.9(656)	1.3292	23.733	2433	1.216	2959	2.300	0.63511	14.011	0.0861	1809	29.208	129.1	0.51	0.01
COMBUSTOR	0	15	8 21														
42.763	56.108	2620	669.3(825)	1.3126	23.722	2685											
42.763	23.737	2126	498.8(656)	1.3293	23.722	2434	1.200	2921	2.300	0.63278	14.011	0.0865	1798	28.722	128.3	0.51	0.00
COMBUSTOR	0	16	9 21														
44.310	45.203	2586	657.8(813)	1.3137	23.721	2668											
44.310	33.869	2412	597.4(753)	1.3195	23.721	2583	0.673	1739	2.313	0.58451	14.011	0.0936	1569	15.795	112.0	0.51	0.00
COMBUSTOR	0	17	10 21														
44.800	42.418	3613	654.7(1159)	1.2620	24.745	3027											
44.800	37.078	3513	616.3(1123)	1.2661	24.747	2989	0.464	1388	2.401	0.57838	14.011	0.0946	1503	12.475	107.2	0.51	0.43
COMBUSTOR	0	18	11 21														
45.483	41.205	2725	650.7(859)	1.3070	23.869	2724											
45.483	35.258	2627	616.0(825)	1.3103	23.869	2677	0.492	1318	2.336	0.57499	14.011	0.0951	1433	11.779	102.3	0.51	0.06

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.188	36.722	2562	651.4(836)	1.3151	22.812	2710											
46.188	29.519	2430	604.0(789)	1.3195	22.812	2644	0.583	1541	2.402	0.56155	14.067	0.0978	1413	13.451	100.5	0.63	0.02
COMBUSTOR	0	20	13 21														
46.198	36.832	2505	651.4(817)	1.3177	22.763	2685											
46.198	29.437	2373	603.7(770)	1.3221	22.763	2618	0.590	1545	2.395	0.56084	14.067	0.0979	1414	13.468	100.5	0.63	0.00
COMBUSTOR	0	21	14 21														
46.260	36.479	2496	651.1(814)	1.3181	22.756	2681											
46.260	28.933	2359	601.9(765)	1.3227	22.756	2611	0.600	1568	2.395	0.55900	14.067	0.0982	1414	13.621	100.5	0.63	0.00
COMBUSTOR	0	22	15 21														
47.310	30.430	2480	645.8(808)	1.3187	22.755	2673											
47.310	20.384	2249	563.1(726)	1.3265	22.755	2553	0.797	2034	2.408	0.51817	14.067	0.1060	1443	16.382	102.6	0.63	0.00
COMBUSTOR	0	23	16 21														
48.110	26.296	3584	642.0(1193)	1.2625	23.805	3074											
48.110	19.423	3363	554.2(1111)	1.2717	23.810	2988	0.701	2096	2.515	0.47629	14.067	0.1153	1490	15.518	105.9	0.63	0.39
COMBUSTOR	0	24	17 21														
48.723	28.436	2634	639.1(860)	1.3113	22.906	2738											
48.723	18.625	2380	547.1(769)	1.3199	22.906	2611	0.822	2145	2.432	0.43488	14.067	0.1263	1540	14.500	109.5	0.63	0.06
COMBUSTOR	0	25	18 21														
50.173	23.510	2472	633.5(805)	1.3186	22.777	2667											
50.173	10.746	2039	479.9(652)	1.3337	22.777	2436	1.138	2772	2.429	0.35340	14.067	0.1554	1640	15.227	116.6	0.63	0.01
COMBUSTOR	0	26	19 21														
50.703	20.738	2445	632.0(796)	1.3198	22.758	2655											
50.703	7.867	1924	447.8(612)	1.3382	22.758	2371	1.280	3036	2.436	0.33052	14.067	0.1662	1662	15.592	118.2	0.63	0.00
COMBUSTOR	0	27	20 21														
52.113	17.898	2433	628.5(791)	1.3203	22.755	2649											
52.113	5.800	1838	419.5(583)	1.3416	22.755	2321	1.393	3234	2.447	0.28170	14.067	0.1950	1703	14.156	121.1	0.63	0.00
COMBUSTOR	0	28	21 21														
54.213	17.117	2412	622.2(787)	1.3210	22.654	2645											
54.213	5.525	1820	413.4(579)	1.3424	22.654	2316	1.396	3232	2.457	0.23161	14.111	0.2379	1754	11.633	124.3	0.64	0.00
COMBUSTOR	0	29	22 21														
54.713	14.472	2405	621.2(785)	1.3213	22.649	2641											
54.713	3.767	1717	379.7(544)	1.3466	22.649	2253	1.543	3476	2.471	0.22214	14.111	0.2480	1764	11.999	125.0	0.64	0.00
COMBUSTOR	0	30	23 21														
55.463	14.998	2400	619.7(783)	1.3215	22.649	2639											
55.463	4.106	1736	386.4(550)	1.3458	22.649	2264	1.509	3417	2.467	0.20940	14.111	0.2631	1775	11.119	125.8	0.64	0.00
COMBUSTOR	0	31	24 21														
55.760	10.416	3339	619.2(1110)	1.2741	23.515	2999											
55.760	4.240	2734	389.2(887)	1.2978	23.520	2739	1.239	3393	2.584	0.20478	14.111	0.2690	1780	10.797	126.2	0.64	0.32
COMBUSTOR	0	32	25 21														
56.223	11.884	2540	618.4(831)	1.3149	22.774	2700											
56.223	3.259	1846	372.6(586)	1.3398	22.774	2324	1.509	3507	2.505	0.16200	14.111	0.3401	1822	8.830	129.1	0.64	0.05
COMBUSTOR	0	33	26 21														
57.648	10.315	2412	616.3(787)	1.3208	22.667	2643											
57.648	2.021	1600	332.9(504)	1.3516	22.667	2178	1.729	3765	2.502	0.14976	14.111	0.3679	1842	8.763	130.5	0.64	0.01
COMBUSTOR	0	34	27 21														
57.703	12.314	2393	616.2(780)	1.3217	22.651	2635											
57.703	2.876	1661	359.9(525)	1.3490	22.651	2218	1.615	3580	2.483	0.14934	14.111	0.3689	1842	8.310	130.5	0.64	0.00
COMBUSTOR	0	35	28 21														
57.843	12.103	2390	616.0(779)	1.3218	22.649	2633											
57.843	2.757	1648	356.4(520)	1.3496	22.649	2209	1.631	3603	2.485	0.14826	14.111	0.3716	1843	8.303	130.6	0.64	0.00
COMBUSTOR	0	36	29 21														
57.923	8.949	2404	615.9(784)	1.3211	22.661	2640											
57.923	1.552	1545	316.6(486)	1.3543	22.661	2142	1.806	3869	2.513	0.14992	14.111	0.3675	1843	9.015	130.6	0.64	0.00
COMBUSTOR	0	37	30 21														
58.203	7.084	2390	615.5(779)	1.3218	22.650	2633											
58.203	1.075	1482	300.2(465)	1.3575	22.650	2102	1.890	3972	2.532	0.14943	14.111	0.3687	1844	9.224	130.6	0.64	0.00

ORIGINAL PAGE IS OF POOR QUALITY

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                     P     T       H            GAMMA  MOLWT SONV  MACH  VEL   S      W/A      W     A/AC    MOMTM   Q     IVAC  PHI  ETAC
COMBUSTOR            0    38    31  21
58.429          7.723 2388   615.2( 778) 1.3219 22.649 2632
58.429          1.212 1493   304.6( 469) 1.3570 22.649 2109 1.869 3942 2.524 0.14917 14.111 0.3693   1844  9.139 130.7 0.64 0.00
COMBUSTOR            0    39    32  21
59.153          9.394 2385   614.4( 778) 1.3220 22.649 2631
59.153          1.650 1537   319.2( 483) 1.3548 22.648 2138 1.798 3843 2.506 0.14681 14.111 0.3755   1844  8.769 130.7 0.64 0.00
COMBUSTOR            0    40    33  21
60.173          3.734 3048   613.4(1007) 1.2891 23.248 2899
60.173          0.875 2169   292.2( 691) 1.3215 23.291 2476 1.619 4008 2.650 0.14587 14.111 0.3777   1843  9.087 130.6 0.64 0.22
COMBUSTOR            0    41    34  21
62.183         12.242 2478   611.4( 809) 1.3176 22.736 2672
62.183          3.350 1796   371.0( 570) 1.3423 22.736 2296 1.510 3468 2.494 0.15095 14.111 0.3650   1834  8.134 130.0 0.64 0.03
COMBUSTOR            0    42    35  21
63.603         11.531 2388   610.0( 778) 1.3217 22.661 2631
63.603          2.506 1627   344.1( 513) 1.3504 22.661 2195 1.662 3648 2.488 0.15504 14.111 0.3553   1828  8.788 129.5 0.64 0.00
COMBUSTOR            0    43    36  21
66.067          9.296 2368   607.5( 771) 1.3225 22.650 2622
66.067          1.773 1558   325.6( 490) 1.3538 22.650 2152 1.746 3755 2.504 0.14696 14.111 0.3749   1817  8.577 128.8 0.64 0.00
COMBUSTOR            0    44    37  21
66.443         12.117 2365   607.0( 770) 1.3227 22.649 2620
66.443          3.666 1753   392.4( 556) 1.3451 22.649 2275 1.440 3277 2.481 0.13662 14.111 0.4032   1816  6.958 128.7 0.64 0.00
COMBUSTOR  REGEN   45    38  21
66.443         12.117 2483   649.7( 813) 1.3187 22.649 2681
66.443          2.155 1610   343.6( 508) 1.3514 22.649 2185 1.791 3913 2.498 0.13662 14.111 0.4032   1939  8.309 137.4 0.64 0.00
NOZZLE   AE          46    39   5
88.679         12.117 2365   607.0( 770) 1.3227 22.649 2620
88.679          0.379  954   129.8( 294) 1.3847 22.649 1703 2.869 4887 2.481 0.02844 14.111 1.9371   2331  2.160 165.2 0.64 0.00
NOZZLE   PO          47    40   5
88.679         12.117 2365   607.0( 770) 1.3227 22.649 2620
88.679          0.154  741    63.0( 227) 1.3938 22.649 1506 3.464 5217 2.481 0.01587 14.111 3.4709   2425  1.287 171.9 0.64 0.00
NOZZLE   AE REGEN    48    41   5
88.679         12.117 2483   649.7( 813) 1.3187 22.649 2681
88.679          0.397 1022   151.2( 315) 1.3814 22.649 1761 2.837 4994 2.498 0.02844 14.111 1.9371   2387  2.207 169.2 0.64 0.00
NOZZLE   PO REGEN    49    42   5
88.679         12.117 2483   649.7( 813) 1.3187 22.649 2681
88.679          0.154  784    76.5( 240) 1.3922 22.649 1548 3.459 5356 2.498 0.01540 14.111 3.5784   2490  1.281 176.5 0.64 0.00
FICTIVE COMBUSTR     67    60   0
66.443        173.110 4994   607.0(1707) 1.1829 25.380 3402
66.443          0.154 1129  -904.7( 322) 1.3495 25.654 1719 5.060 8697 2.418 0.01967 14.111 2.8009   3925  2.659 278.1 0.64 1.00
FICTIVE NOZZLE       68    61   0
88.679          5.542 2347   600.5( 764) 1.3233 22.649 2611
88.679          0.628 1344   255.3( 419) 1.3646 22.649 2007 2.071 4156 2.546 0.02844 14.111 1.9371   2134  1.837 151.3 0.64 0.00
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XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/PBO	P-IB/PTO	P-OB/PBO	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.702E-01	0.000	0.000	0.000	2.470E-02	4.484E 00	6.929E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.484E 00	6.929E-04	0.000	0.000
3.070E 01	1.510E 00	0.000	-1.121E 02	0.000	0.000	0.000	5.053E 02	9.814E 00	1.516E-03	0.000	0.000
3.508E 01	2.031E 00	0.000	-2.269E 02	0.000	0.000	0.000	6.804E 02	1.320E 01	2.039E-03	0.000	0.000
3.559E 01	2.205E 00	0.000	-2.462E 02	0.000	0.000	0.000	7.013E 02	1.433E 01	2.214E-03	0.000	0.000
3.606E 01	2.485E 00	0.000	-2.700E 02	-1.206E 02	-1.206E 02	0.000	7.246E 02	1.615E 01	2.496E-03	0.000	0.000
3.648E 01	2.332E 00	0.000	-2.906E 02	-1.236E 02	-1.236E 02	0.000	7.443E 02	1.516E 01	2.342E-03	0.000	0.000
3.658E 01	2.391E 00	3.189E 00	-3.286E 02	-1.243E 02	-1.243E 02	0.000	7.490E 02	1.554E 01	2.401E-03	2.073E 01	3.203E-03
3.659E 01	2.395E 00	3.217E 00	-3.287E 02	-1.243E 02	-1.243E 02	0.000	7.493E 02	1.556E 01	2.405E-03	2.091E 01	3.230E-03
3.701E 01	2.640E 00	5.143E 00	-3.304E 02	-1.274E 02	-1.274E 02	0.000	7.932E 02	1.716E 01	2.651E-03	3.343E 01	5.165E-03
3.729E 01	2.810E 00	6.250E 00	-3.294E 02	-1.293E 02	-1.293E 02	0.000	8.187E 02	1.827E 01	2.822E-03	4.062E 01	6.277E-03
3.803E 01	3.355E 00	8.977E 00	-3.203E 02	-1.355E 02	-1.355E 02	0.000	9.022E 02	2.180E 01	3.369E-03	5.835E 01	9.016E-03
3.871E 01	9.087E 00	1.137E 01	-3.383E 02	-1.883E 02	-1.456E 02	-4.272E 01	9.784E 02	5.906E 01	9.126E-03	7.393E 01	1.142E-02
3.875E 01	9.398E 00	1.132E 01	-3.400E 02	-1.905E 02	-1.464E 02	-4.419E 01	9.826E 02	6.108E 01	9.438E-03	7.359E 01	1.137E-02
3.901E 01	1.158E 01	1.096E 01	-3.533E 02	-2.072E 02	-1.527E 02	-5.445E 01	1.012E 03	7.526E 01	1.163E-02	7.124E 01	1.101E-02
3.950E 01	1.450E 01	1.028E 01	-3.831E 02	-2.428E 02	-1.691E 02	-7.374E 01	1.068E 03	9.422E 01	1.456E-02	6.681E 01	1.032E-02
3.973E 01	1.336E 01	9.956E 00	-3.945E 02	-2.619E 02	-1.790E 02	-8.289E 01	1.095E 03	8.683E 01	1.342E-02	6.471E 01	9.999E-03
4.000E 01	1.206E 01	1.469E 01	-3.989E 02	-2.857E 02	-1.923E 02	-9.336E 01	1.126E 03	7.836E 01	1.211E-02	9.547E 01	1.475E-02
4.020E 01	1.597E 01	1.829E 01	-3.982E 02	-3.047E 02	-2.034E 02	-1.013E 02	1.150E 03	1.038E 02	1.604E-02	1.189E 02	1.837E-02
4.040E 01	1.977E 01	1.822E 01	-3.999E 02	-3.236E 02	-2.146E 02	-1.090E 02	1.173E 03	1.285E 02	1.986E-02	1.184E 02	1.829E-02
4.041E 01	1.997E 01	1.821E 01	-3.999E 02	-3.245E 02	-2.151E 02	-1.094E 02	1.174E 03	1.298E 02	2.005E-02	1.184E 02	1.829E-02
4.071E 01	2.581E 01	1.810E 01	-4.101E 02	-3.542E 02	-2.330E 02	-1.212E 02	1.209E 03	1.678E 02	2.592E-02	1.176E 02	1.818E-02
4.120E 01	3.527E 01	2.450E 00	-4.646E 02	-4.038E 02	-2.637E 02	-1.400E 02	1.267E 03	2.292E 02	3.542E-02	1.592E 01	2.460E-03
4.150E 01	4.100E 01	2.442E 00	-5.196E 02	-4.349E 02	-2.836E 02	-1.512E 02	1.302E 03	2.665E 02	4.117E-02	1.587E 01	2.453E-03
4.246E 01	4.372E 01	2.417E 00	-6.943E 02	-5.433E 02	-3.485E 02	-1.948E 02	1.416E 03	2.842E 02	4.391E-02	1.571E 01	2.428E-03
4.269E 01	4.473E 01	2.411E 00	-7.331E 02	-5.703E 02	-3.631E 02	-2.072E 02	1.443E 03	2.907E 02	4.492E-02	1.567E 01	2.422E-03
4.270E 01	4.478E 01	2.411E 00	-7.347E 02	-5.715E 02	-3.637E 02	-2.078E 02	1.444E 03	2.910E 02	4.497E-02	1.567E 01	2.421E-03
4.276E 01	4.507E 01	2.409E 00	-7.457E 02	-5.790E 02	-3.676E 02	-2.114E 02	1.452E 03	2.929E 02	4.526E-02	1.566E 01	2.420E-03
4.431E 01	5.191E 01	1.583E 01	-9.597E 02	-7.402E 02	-4.384E 02	-3.017E 02	1.639E 03	3.374E 02	5.213E-02	1.029E 02	1.590E-02
4.480E 01	5.407E 01	2.008E 01	-1.023E 03	-7.832E 02	-4.517E 02	-3.315E 02	1.698E 03	3.514E 02	5.431E-02	1.305E 02	2.017E-02
4.548E 01	4.451E 01	2.601E 01	-1.088E 03	-8.403E 02	-4.670E 02	-3.733E 02	1.781E 03	2.893E 02	4.470E-02	1.690E 02	2.612E-02
4.610E 01	3.464E 01	2.440E 01	-1.104E 03	-8.962E 02	-4.823E 02	-4.139E 02	1.868E 03	2.251E 02	3.479E-02	1.586E 02	2.450E-02
4.620E 01	3.450E 01	2.438E 01	-1.103E 03	-8.970E 02	-4.825E 02	-4.144E 02	1.869E 03	2.242E 02	3.464E-02	1.584E 02	2.448E-02
4.626E 01	3.363E 01	2.424E 01	-1.103E 03	-9.016E 02	-4.839E 02	-4.178E 02	1.877E 03	2.186E 02	3.377E-02	1.575E 02	2.434E-02
4.731E 01	1.892E 01	2.184E 01	-1.066E 03	-9.759E 02	-5.057E 02	-4.702E 02	2.006E 03	1.230E 02	1.901E-02	1.420E 02	2.194E-02
4.811E 01	1.882E 01	2.002E 01	-1.013E 03	-1.029E 03	-5.217E 02	-5.075E 02	2.105E 03	1.223E 02	1.891E-02	1.301E 02	2.011E-02
4.872E 01	1.862E 01	1.862E 01	-9.585E 02	-1.070E 03	-5.335E 02	-5.362E 02	2.182E 03	1.210E 02	1.870E-02	1.210E 02	1.870E-02
5.017E 01	1.075E 01	1.075E 01	-8.487E 02	-1.149E 03	-5.602E 02	-5.892E 02	2.363E 03	6.984E 01	1.079E-02	6.984E 01	1.079E-02
5.070E 01	7.867E 00	7.867E 00	-8.230E 02	-1.171E 03	-5.694E 02	-6.011E 02	2.429E 03	5.113E 01	7.900E-03	5.113E 01	7.900E-03
5.211E 01	5.800E 00	5.800E 00	-7.725E 02	-1.220E 03	-5.928E 02	-6.267E 02	2.607E 03	3.770E 01	5.825E-03	3.770E 01	5.825E-03
5.421E 01	5.525E 00	5.525E 00	-7.101E 02	-1.285E 03	-6.242E 02	-6.604E 02	2.873E 03	3.591E 01	5.549E-03	3.591E 01	5.549E-03
5.471E 01	3.767E 00	3.767E 00	-6.981E 02	-1.299E 03	-6.311E 02	-6.676E 02	2.937E 03	2.448E 01	3.783E-03	2.448E 01	3.783E-03
5.546E 01	4.106E 00	4.106E 00	-6.828E 02	-1.319E 03	-6.410E 02	-6.777E 02	3.033E 03	2.669E 01	4.124E-03	2.669E 01	4.124E-03
5.576E 01	4.240E 00	4.240E 00	-6.765E 02	-1.326E 03	-6.448E 02	-6.816E 02	3.071E 03	2.756E 01	4.259E-03	2.756E 01	4.259E-03
5.622E 01	2.069E 00	4.450E 00	-6.334E 02	-1.338E 03	-6.502E 02	-6.874E 02	3.102E 03	1.345E 01	2.078E-03	2.892E 01	4.469E-03
5.769E 01	2.021E 00	2.021E 00	-6.104E 02	-1.368E 03	-6.647E 02	-7.035E 02	3.210E 03	1.314E 01	2.030E-03	1.314E 01	2.030E-03
5.770E 01	3.825E 00	1.927E 00	-6.098E 02	-1.369E 03	-6.652E 02	-7.041E 02	3.217E 03	2.486E 01	3.841E-03	1.253E 01	1.935E-03
5.784E 01	3.825E 00	1.689E 00	-6.086E 02	-1.372E 03	-6.665E 02	-7.055E 02	3.234E 03	2.486E 01	3.841E-03	1.097E 01	1.696E-03
5.792E 01	1.552E 00	1.552E 00	-6.080E 02	-1.374E 03	-6.673E 02	-7.063E 02	3.245E 03	1.009E 01	1.559E-03	1.009E 01	1.559E-03
5.820E 01	1.075E 00	1.075E 00	-6.063E 02	-1.379E 03	-6.698E 02	-7.089E 02	3.280E 03	6.987E 00	1.080E-03	6.987E 00	1.080E-03
5.843E 01	1.212E 00	1.212E 00	-6.052E 02	-1.383E 03	-6.718E 02	-7.108E 02	3.309E 03	7.876E 00	1.217E-03	7.876E 00	1.217E-03
5.915E 01	1.650E 00	1.650E 00	-6.013E 02	-1.394E 03	-6.778E 02	-7.164E 02	3.402E 03	1.072E 01	1.657E-03	1.072E 01	1.657E-03
6.017E 01	8.750E-01	8.750E-01	-5.984E 02	-1.409E 03	-6.853E 02	-7.238E 02	3.532E 03	5.687E 00	8.787E-04	5.687E 00	8.787E-04
6.218E 01	3.350E 00	3.350E 00	-5.979E 02	-1.437E 03	-6.976E 02	-7.393E 02	3.790E 03	2.177E 01	3.364E-03	2.177E 01	3.364E-03
6.360E 01	2.506E 00	2.506E 00	-5.979E 02	-1.456E 03	-7.051E 02	-7.510E 02	3.972E 03	1.629E 01	2.517E-03	1.629E 01	2.517E-03
6.607E 01	1.773E 00	1.773E 00	-5.979E 02	-1.492E 03	-7.182E 02	-7.742E 02	4.289E 03	1.152E 01	1.781E-03	1.152E 01	1.781E-03

READING # 0091 BLOCK = 90 TIME = 190.051 MACH 7.3 PT = 995.749 TT = 3071.8

XABS	P-IB	P-DB	PDA	DUX	Q-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.644$_{4}$E 01	5.670E 00	1.661E 00	-5.979E 02	-1.498E 03	-7.202E 02	-7.781E 02	4.537E 03	3.685E 01	5.694E-03	1.080E 01	1.668E-03
6.648$_{8}$E 01	5.670E 00	1.649E 00	-5.979E 02	-1.499E 03	-7.204E 02	-7.786E 02	4.342E 03	3.685E 01	5.694E-03	1.072E 01	1.657E-03
6.668$_{8}$E 01	5.343E 00	1.590E 00	-5.979E 02	-1.502E 03	-7.214E 02	-7.808E 02	4.368E 03	3.473E 01	5.366E-03	1.033E 01	1.597E-03
6.834$_{4}$E 01	2.630E 00	2.265E 00	-5.676E 02	-1.524E 03	-7.294E 02	-7.947E 02	4.584E 03	1.709E 01	2.641E-03	1.472E 01	2.275E-03
6.901$_{1}$E 01	1.951E 00	2.197E 00	-5.218E 02	-1.530E 03	-7.324E 02	-7.980E 02	4.665E 03	1.268E 01	1.959E-03	1.428E 01	2.207E-03
6.978$_{8}$E 01	1.170E 00	1.796E 00	-4.732E 02	-1.537E 03	-7.355E 02	-8.014E 02	4.760E 03	7.604E 00	1.175E-03	1.167E 01	1.803E-03
7.050$_{0}$E 01	9.237E-01	1.420E 00	-4.395E 02	-1.543E 03	-7.383E 02	-8.045E 02	4.848E 03	6.003E 00	9.276E-04	9.224E 00	1.426E-03
7.111$_{1}$E 01	7.150E-01	1.315E 00	-4.163E 02	-1.548E 03	-7.405E 02	-8.070E 02	4.922E 03	4.647E 00	7.181E-04	8.547E 00	1.321E-03
7.249$_{9}$E 01	6.100E-01	1.078E 00	-3.749E 02	-1.556E 03	-7.452E 02	-8.111E 02	5.088E 03	3.965E 00	6.126E-04	7.006E 00	1.083E-03
7.402$_{2}$E 01	5.673E-01	8.150E-01	-3.392E 02	-1.564E 03	-7.496E 02	-8.142E 02	5.273E 03	3.687E 00	5.697E-04	5.297E 00	8.185E-04
7.492$_{2}$E 01	5.421E-01	2.250E-01	-3.187E 02	-1.568E 03	-7.517E 02	-8.162E 02	5.372E 03	3.523E 00	5.445E-04	1.462E 00	2.260E-04
7.493$_{3}$E 01	5.420E-01	2.224E-01	-3.183E 02	-1.568E 03	-7.517E 02	-8.162E 02	5.372E 03	3.523E 00	5.443E-04	1.445E 00	2.233E-04
7.625$_{5}$E 01	5.050E-01	0.000	-3.072E 02	-1.574E 03	-7.543E 02	-8.199E 02	5.424E 03	3.282E 00	5.072E-04	0.000	0.000
7.910$_{0}$E 01	3.450E-01	0.000	-2.902E 02	-1.578E 03	-7.584E 02	-8.199E 02	5.523E 03	2.242E 00	3.465E-04	0.000	0.000
8.300$_{0}$E 01	2.200E-01	0.000	-2.781E 02	-1.582E 03	-7.619E 02	-8.199E 02	5.627E 03	1.430E 00	2.209E-04	0.000	0.000
8.581$_{1}$E 01	2.500E-01	0.000	-2.729E 02	-1.585E 03	-7.646E 02	-8.199E 02	5.682E 03	1.625E 00	2.511E-04	0.000	0.000
8.867$_{7}$E 01	3.500E-01	0.000	-2.657E 02	-1.590E 03	-7.698E 02	-8.199E 02	5.705E 03	2.275E 00	3.515E-04	0.000	0.000
8.868$_{8}$E 01	3.502E-01	0.000	-2.657E 02	-1.590E 03	-7.699E 02	-8.199E 02	5.705E 03	2.276E 00	3.517E-04	0.000	0.000

READING = 0091 BLOCK = 90 TIME = 190.051 MACH 7.3 PT = 995.749 TT = 3071.8

X	DDRAG	CDRAG	CF	HC
4.040E 01	9.894E 01	9.894E 01	2.577E-03	3.746E-02
4.041E 01	1.531E-01	9.910E 01	3.164E-03	4.491E-02
4.071E 01	4.652E 00	1.037E 02	2.909E-03	5.300E-02
4.120E 01	7.251E 00	1.110E 02	3.055E-03	4.568E-02
4.150E 01	4.256E 00	1.153E 02	2.962E-03	5.070E-02
4.246E 01	1.230E 01	1.276E 02	3.232E-03	4.532E-02
4.269E 01	2.801E 00	1.304E 02	3.602E-03	4.194E-02
4.270E 01	1.187E-01	1.305E 02	3.323E-03	4.619E-02
4.276E 01	7.462E-01	1.312E 02	3.291E-03	4.664E-02
4.431E 01	1.440E 01	1.456E 02	3.648E-03	3.965E-02
4.480E 01	3.128E 00	1.487E 02	3.787E-03	3.536E-02
4.548E 01	4.085E 00	1.528E 02	4.297E-03	2.724E-02
4.619E 01	4.531E 00	1.574E 02	4.027E-03	3.017E-02
4.620E 01	6.807E-02	1.574E 02	3.846E-03	3.240E-02
4.626E 01	3.938E-01	1.578E 02	3.813E-03	3.271E-02
4.731E 01	7.318E 00	1.651E 02	3.720E-03	3.043E-02
4.811E 01	5.834E 00	1.710E 02	3.660E-03	2.966E-02
4.872E 01	4.455E 00	1.754E 02	4.123E-03	2.357E-02
5.017E 01	1.037E 01	1.858E 02	3.577E-03	2.147E-02
5.070E 01	3.613E 00	1.894E 02	3.477E-03	1.848E-02
5.211E 01	9.106E 00	1.985E 02	3.419E-03	1.497E-02
5.421E 01	1.163E 01	2.101E 02	3.356E-03	1.307E-02
5.471E 01	2.528E 00	2.127E 02	3.360E-03	1.089E-02
5.546E 01	3.696E 00	2.164E 02	3.314E-03	1.141E-02
5.576E 01	1.377E 00	2.178E 02	3.299E-03	1.159E-02
5.622E 01	1.096E 00	2.188E 02	3.855E-03	7.556E-03
5.765E 01	3.432E 00	2.223E 02	3.392E-03	6.376E-03
5.770E 01	1.988E-01	2.225E 02	3.219E-03	8.356E-03
5.788E 01	4.743E-01	2.230E 02	3.207E-03	8.153E-03
5.792E 01	2.935E-01	2.232E 02	3.416E-03	5.334E-03
5.820E 01	1.117E 00	2.244E 02	3.453E-03	4.155E-03
5.843E 01	9.053E-01	2.253E 02	3.386E-03	4.550E-03
5.915E 01	2.761E 00	2.280E 02	3.273E-03	5.674E-03
6.017E 01	3.945E 00	2.320E 02	3.488E-03	3.536E-03
6.218E 01	7.871E 00	2.398E 02	3.601E-03	7.855E-03
6.360E 01	5.287E 00	2.451E 02	3.259E-03	7.371E-03
6.607E 01	8.979E 00	2.541E 02	3.284E-03	5.801E-03
6.644E 01	1.217E 00	2.553E 02	3.213E-03	9.340E-03
6.648E 01	9.896E-02	2.554E 02	3.173E-03	9.217E-03
6.668E 01	4.149E-01	2.558E 02	3.157E-03	8.963E-03
6.834E 01	3.339E 00	2.592E 02	3.068E-03	7.364E-03
6.901E 01	1.179E 00	2.604E 02	3.029E-03	6.656E-03
6.978E 01	1.243E 00	2.616E 02	2.955E-03	5.372E-03
7.050E 01	1.017E 00	2.626E 02	2.904E-03	4.591E-03
7.111E 01	7.805E-01	2.634E 02	2.872E-03	4.163E-03
7.249E 01	1.610E 00	2.650E 02	2.830E-03	3.660E-03
7.402E 01	1.605E 00	2.666E 02	2.785E-03	3.179E-03
7.492E 01	6.971E-01	2.673E 02	2.673E-03	2.097E-03
7.493E 01	9.406E-04	2.673E 02	2.673E-03	2.092E-03
7.625E 01	3.276E-01	2.676E 02	2.716E-03	2.540E-03
7.910E 01	6.002E-01	2.682E 02	2.634E-03	1.926E-03
8.300E 01	4.941E-01	2.687E 02	2.539E-03	1.386E-03
8.581E 01	2.289E-01	2.690E 02	2.547E-03	1.511E-03
8.867E 01	1.101E-01	2.691E 02	2.593E-03	1.911E-03
8.868E 01	0.000	2.691E 02	2.593E-03	1.912E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	=540.	(LBF)
MEASURED THRUST	=33.	(LBF)
CALCULATED SPECIFIC IMPULSE	=1835.	(LBF=SEC/LBM)
MEASURED SPECIFIC IMPULSE	=113.	(LBF=SEC/LBM)
CALCULATED THRUST COEFFICIENT	=.3724	
MEASURED THRUST COEFFICIENT	=.0229	

REGENERATIVE=COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	2186.	(LBF)
NET THRUST	=489.	(LBF)
SPECIFIC IMPULSE	=1661.	(LBF=SEC/LBM)
THRUST COEFFICIENT	=.3370	

MOMENTUM AND FORCES

INLET FRICTION DRAG			96.9	(LBF)
INLET MOMENTUM CHANGE			=498.8	(LBF)
COMBUSTOR FRICTION DRAG			156.4	(LBF)
COMBUSTOR STRUT DRAG			5.31	(LBF)
COMBUSTOR MOMENTUM CHANGE			=360.	(LBF)
NOZZLE FRICTION DRAG			13.75	(LBF)
NOZZLE STRUT DRAG			0.00	(LBF)
NOZZLE MOMENTUM CHANGE			318.	(LBF)
NOZZLE PRESSURE INTEGRAL			332.	(LBF)
EXTERNAL FRICTION DRAG			37.73	(LBF)
EXTERNAL PRESSURE INTEGRAL			=622.	(LBF)
TOTAL EXTERNAL DRAG			=660.	(LBF)
TOTAL STRUT DRAG			5.31	(LBF)
CAVITY FORCE			=519.	(LBF)
CALCULATED LOAD CELL FORCE			=1719.	(LBF)
MEASURED LOAD CELL FORCE			=1211.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0.	0.0.	0.0.	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7030	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.587	(IN)
NOZZLE SHROUD TRAILING EDGE	74.927	(IN)
NOZZLE PLUG TRAILING EDGE	88.679	(IN)
STRUT LEADING EDGE	57.843	(IN)
STRUT TRAILING EDGE	66.443	(IN)
COMBUSTOR EXIT	66.443	(IN)

INLET

ANGLE OF ATTACK	3.000	(DEGREES)
MASS FLOW RATIO	0.9042	
ADDITIVE DRAG COEFFICIENT	0.0087	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0860	
DELTA PT2	0.0895	(PSI)
TOTAL PRESSURE RECOVERY = SUPERSONIC	0.1738	
TOTAL PRESSURE RECOVERY = SUBSONIC	0.0873	
INLET PROCESS EFFICIENCY = SUPERSONIC	0.8705	
INLET PROCESS EFFICIENCY = SUBSONIC	0.9031	
KINETIC ENERGY EFFICIENCY = SUPERSONIC	0.9120	
KINETIC ENERGY EFFICIENCY = SUBSONIC	0.8790	
ENTHALPY AT PO = SUPERSONIC	=15.36	(BTU/LBM)
ENTHALPY AT PO = SUBSONIC	9.33	(BTU/LBM)

COMBUSTOR

FUEL=AIR RATIO	0.0213
EQUIVALENCE RATIO	0.643
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.0700
COMBUSTOR EFFECTIVENESS	0.1397
INJECTOR DISCHARGE COEFFICIENTS	0.9692, 0.5833, 0.7927,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT = CS	0.9155
NOZZLE COEFFICIENT = CT	0.8467
PROCESS EFFICIENCY	0.6310
KINETIC ENERGY EFFICIENCY	0.7993

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.688	B
1C	44.300	
2A	50.163	
2C	46.250	
3A	55.453	
3B	57.638	
4	46.188	C

Reading 91

t = 203.55 sec.

2/13/75


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READING = 0091  BLOCK = 105  TIME = 203.551  MACH  7.3  PT = 995.749  TT = 3070.3
                                    RAMJET PERFORMANCE

                                  S U M M A R Y   R E P O R T

              P      T      H            GAMMA  MOLWT SONV  MACH  VEL    S     W/A      A     A/AC   MOPTM    G     IVAC  PHI  ETAC
WIND TUNNEL          1    0   6
 0.000   995.749 3070  690.9( 815) 1.2906 28.956 2608
 0.000     0.154  297  -57.8(  71) 1.3964 28.955  843 7.260 6121 1.815 0.05952 13.780 0.9039  2657  5.662 192.8
SPIKE TIP NS         2    0   7
 0.600    11.187 3070  690.9( 815) 1.2903 28.955 2608
 0.600    10.300 3013  673.7( 799) 1.2921 28.955 2586 0.359  929 2.123 0.05952 13.780 0.9039  2783  0.860 201.9
WIND TUNNEL          3    0   0
 0.000   995.749 3070  690.9( 815) 1.2906 28.956 2608
 0.000     0.166  303  -66.2(  73) 1.3967 28.955  853 7.171 6115 1.815 0.06290 14.562 0.9039  2806  5.977 192.7
SPIKE TIP NS         4    0   0
 0.600    11.187 3070  690.9( 815) 1.2903 28.955 2608
 0.600    10.183 3006  671.3( 796) 1.2924 28.955 2583
                                                  0.384  991 2.123 0.06290 14.562 0.9039  2806  0.969 192.7
INLET THROAT         5    0   4
40.400   190.129 2967  659.6( 785) 1.2939 28.955 2567
40.400    12.159 1523  248.3( 377) 1.3467 28.955 1877 2.418 4537 1.918 0.67876 13.780 0.0793  2190 47.858 158.9
INLET UPNRSK         6    0   3
40.400   190.129 2967  659.6( 785) 1.2939 28.955 2567
40.400    10.488 1463  232.5( 361) 1.3500 28.955 1842 2.510 4623 1.918 0.61705 13.780 0.0872  2213 44.333 160.6
INLET DNNRBK         7    0   4
40.400    87.808 2967  659.6( 785) 1.2938 28.955 2567
40.400    74.082 2862  628.0( 754) 1.2972 28.955 2525 0.498 1257 1.971 0.61705 13.780 0.0872  2213 12.054 160.6
COMBUSTOR            0    8   1   8
40.410   138.165 2929  670.9( 848) 1.2972 26.338 2678
40.410    16.292 1748  300.3( 480) 1.3385 26.338 2102 2.049 4306 2.095 0.68403 13.889 0.0793  2190 45.776 157.7 0.24 0.10
COMBUSTOR            0    9   2   4
40.715   114.499 3134  668.2( 911) 1.2874 26.567 2748
40.715    20.501 2096  335.3( 583) 1.3226 26.567 2277 1.792 4082 2.125 0.68651 13.889 0.0790  2177 43.546 156.7 0.24 0.26
COMBUSTOR            0   10   3  21
41.205   124.901 2836  663.8( 819) 1.3012 26.262 2643
41.205    15.887 1718  314.5( 472) 1.3406 26.262 2088 2.002 4181 2.093 0.68169 13.889 0.0795  2129 44.293 153.3 0.24 0.04
COMBUSTOR            0   11   4   3
41.500   112.072 2793  661.1( 805) 1.3031 26.226 2627
41.500    17.957 1790  347.4( 494) 1.3379 26.225 2131 1.860 3962 2.097 0.67460 13.889 0.0804  2060 41.537 149.6 0.24 0.01
COMBUSTOR            0   12   5  21
42.460    73.790 2746  650.3( 791) 1.3048 26.212 2607
42.460    23.714 2091  443.2( 586) 1.3267 26.212 2294 1.403 3219 2.123 0.63687 13.889 0.0851  1907 31.862 137.3 0.24 0.00
COMBUSTOR            0   13   6  21
42.690    61.027 2692  660.7( 849) 1.3089 23.811 2713
42.690    24.301 2156  475.0( 665) 1.3271 23.811 2444 1.247 3048 2.300 0.63507 14.012 0.0861  1863 30.079 133.0 0.51 0.04
COMBUSTOR            0   14   7  21
42.700    62.762 2608  660.5( 821) 1.3128 23.733 2678
42.700    24.327 2070  475.6( 637) 1.3312 23.733 2403 1.266 3042 2.289 0.63498 14.012 0.0862  1862 30.018 132.9 0.51 0.01
COMBUSTOR            0   15   8  21
42.765    61.783 2593  659.6( 816) 1.3135 23.722 2672
42.765    24.493 2069  479.6( 637) 1.3314 23.721 2403 1.249 3001 2.288 0.63263 14.012 0.0865  1850 29.507 132.0 0.51 0.00
COMBUSTOR            0   16   9  21
44.310    48.972 2522  635.6( 791) 1.3158 23.720 2637
44.310    37.019 2357  578.5( 735) 1.3213 23.720 2555 0.662 1692 2.298 0.58490 14.012 0.0935  1623 15.377 115.9 0.51 0.00
COMBUSTOR            0   17  10  21
44.800    47.135 3010  627.4( 953) 1.2928 24.203 2827
44.800    40.991 2916  593.4( 920) 1.2960 24.203 2786 0.468 1304 2.348 0.57837 14.012 0.0946  1561 11.719 111.4 0.51 0.21
COMBUSTOR            0   18  11  21
45.485    45.865 2543  615.9( 797) 1.3141 23.790 2642
45.485    39.760 2457  586.1( 768) 1.3170 23.790 2600 0.470 1222 2.305 0.57504 14.012 0.0951  1501 10.917 107.1 0.51 0.03
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READING = 0091 BLOCK = 105 TIME = 203.551 MACH 7.3 PT = 995.749 TT = 3070.3

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MUFTM	Q	IVAL	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.200	41.670	2444	604.7(764)	1.3182	23.730	2598											
46.200	32.873	2308	557.5(717)	1.3229	23.730	2529	0.607	1536	2.300	0.55969	14.012	0.0977	1452	13.364	106.5	0.51	0.00
COMBUSTOR	0	20	13 21														
46.260	41.366	2432	603.8(760)	1.3188	23.721	2593											
46.260	32.295	2290	594.9(712)	1.3236	23.721	2521	0.621	1565	2.299	0.55703	14.012	0.0982	1494	13.549	106.6	0.51	0.00
COMBUSTOR	0	21	14 21														
47.310	36.090	2389	589.4(745)	1.3203	23.720	2571											
47.310	22.181	2120	497.6(654)	1.3295	23.720	2431	0.862	2144	2.305	0.51637	14.012	0.1059	1536	17.208	109.6	0.51	0.00
COMBUSTOR	0	22	15 21														
48.110	28.540	3633	579.4(1162)	1.2568	24.980	3014											
48.110	19.215	3347	469.7(1059)	1.2688	24.988	2907	0.806	2343	2.424	0.47459	14.012	0.1153	1588	17.284	113.3	0.51	0.52
COMBUSTOR	0	23	16 21														
48.725	32.477	2536	571.8(793)	1.3129	23.901	2632											
48.725	17.575	2186	451.5(673)	1.3249	23.901	2455	1.000	2454	2.329	0.43316	14.012	0.1263	1637	16.519	116.6	0.51	0.08
COMBUSTOR	0	24	17 21														
50.175	31.268	2322	556.3(722)	1.3222	23.746	2535											
50.175	11.570	1813	385.0(551)	1.3407	23.746	2256	1.298	2928	2.306	0.35202	14.012	0.1554	1735	16.015	123.9	0.51	0.01
COMBUSTOR	0	25	18 21														
50.705	30.482	2284	551.7(709)	1.3238	23.723	2517											
50.705	9.375	1699	356.3(514)	1.3457	23.723	2189	1.429	3127	2.303	0.32922	14.012	0.1662	1761	16.001	125.7	0.51	0.00
COMBUSTOR	0	26	19 21														
52.115	29.985	2249	541.3(698)	1.3250	23.720	2499											
52.115	8.100	1617	330.9(488)	1.3494	23.720	2139	1.517	3244	2.299	0.28059	14.012	0.1950	1817	14.147	129.7	0.51	0.00
COMBUSTOR	0	27	20 21														
54.215	29.174	2205	526.7(686)	1.3266	23.605	2482											
54.215	6.150	1484	287.7(447)	1.3561	23.605	2059	1.680	3459	2.304	0.23067	14.054	0.2379	1865	12.398	134.2	0.52	0.00
COMBUSTOR	0	28	21 21														
54.715	28.728	2192	524.1(681)	1.3272	23.601	2475											
54.715	4.808	1387	258.6(416)	1.3611	23.601	1994	1.827	3645	2.303	0.22124	14.054	0.2480	1897	12.531	136.0	0.52	0.00
COMBUSTOR	0	29	22 21														
55.465	28.716	2180	520.3(677)	1.3276	23.600	2469											
55.465	4.643	1367	252.3(410)	1.3622	23.600	1980	1.849	3662	2.302	0.20856	14.054	0.2631	1912	11.669	136.1	0.52	0.00
COMBUSTOR	0	30	23 21														
55.760	28.712	2176	518.9(676)	1.3277	23.600	2467											
55.760	4.578	1359	249.9(407)	1.3626	23.600	1975	1.858	3669	2.301	0.20399	14.054	0.2690	1918	11.632	136.5	0.52	0.00
COMBUSTOR	0	31	24 21														
56.225	26.021	2182	516.8(678)	1.3274	23.611	2470											
56.225	3.428	1295	225.7(387)	1.3660	23.611	1930	1.977	3817	2.310	0.16134	14.054	0.3401	1966	9.570	139.9	0.52	0.00
COMBUSTOR	0	32	25 21														
57.650	25.827	2154	511.0(669)	1.3285	23.602	2455											
57.650	2.190	1134	179.0(337)	1.3748	23.602	1812	2.249	4076	2.306	0.14912	14.054	0.3679	1987	9.446	141.4	0.52	0.00
COMBUSTOR	0	33	26 21														
57.705	26.778	2152	510.8(668)	1.3286	23.600	2454											
57.705	3.051	1227	208.4(366)	1.3698	23.600	1882	2.067	3890	2.303	0.14876	14.054	0.3689	1987	8.992	141.4	0.52	0.00
COMBUSTOR	0	34	27 21														
57.845	26.711	2150	510.3(667)	1.3286	23.600	2453											
57.845	2.939	1214	204.6(362)	1.3705	23.600	1872	2.089	3911	2.303	0.14764	14.054	0.3717	1988	8.973	141.5	0.52	0.00
COMBUSTOR	0	35	28 21														
57.925	22.170	2217	510.0(689)	1.3255	23.660	2485											
57.925	1.749	1148	161.5(341)	1.3735	23.660	1821	2.294	4176	2.328	0.14932	14.054	0.3675	1989	9.649	141.5	0.52	0.03
COMBUSTOR	0	36	29 21														
58.205	21.943	2157	509.0(669)	1.3283	23.609	2456											
58.205	1.300	1029	144.1(305)	1.3803	23.609	1729	2.471	4273	2.320	0.14680	14.054	0.3688	1989	9.882	141.6	0.52	0.00
COMBUSTOR	0	37	30 21														
58.431	23.039	2146	508.3(666)	1.3268	23.601	2451											
58.431	1.383	1027	146.3(304)	1.3805	23.601	1728	2.463	4256	2.315	0.14857	14.054	0.3693	1990	9.027	141.6	0.52	0.00

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                 P      T      H            GAMMA  MOLWT  SONV  MACH   VEL    S      Z/A      A      A/AC   AOFIM    C     IVAC  PHI  ETAC
COMBUSTOR         0    38   31   21
59.155:     24.851  2138   506.2( 663) 1.3291 23.600 2447
59.155:      1.650  1052   154.3( 312) 1.3792 23.600 1748 2.400 4196 2.307 0.14621 14.054 0.3753   1992  9.535 141.7 0.52 0.00
COMBUSTOR         0    39   32   21
60.175:     18.850  2130   503.6( 661) 1.3293 23.600 2443
60.175:      0.875   949   123.0( 280) 1.3844 23.600 1663 2.623 4364 2.329 0.14528 14.054 0.3777   1991  9.653 141.7 0.52 0.00
COMBUSTOR         0    40   33    5
62.185:     22.279  2327   499.0( 725) 1.3200 23.788 2534
62.185:      4.000  1510   227.3( 453) 1.3528 23.788 2066 1.764 3687 2.340 0.15034 14.054 0.3650   1965  8.615 141.2 0.52 0.08
COMBUSTOR         0    41   34   10
63.605:     28.286  2123   496.0( 658) 1.3294 23.613 2438
63.605:      3.119  1198   194.8( 357) 1.3712 23.613 1860 2.087 3883 2.294 0.15441 14.054 0.3553   1980  9.317 140.9 0.52 0.01
COMBUSTOR         0    42   35    4
66.069:     24.846  2161   490.4( 670) 1.3275 23.661 2455
66.069:      3.198  1275   200.3( 380) 1.3666 23.661 1913 1.992 3810 2.310 0.14636 14.054 0.3749   1972  8.667 140.3 0.52 0.03
COMBUSTOR         0    43   36    5
66.445:     16.941  2531   489.5( 791) 1.3103 24.001 2621
66.445:      4.870  1867   263.9( 567) 1.3343 24.001 2272 1.479 3359 2.384 0.13607 14.054 0.4032   1970  7.104 140.2 0.52 0.17
COMBUSTOR   REGEN  44   37    4
66.445      16.941  3027   666.9( 965) 1.2930 24.000 2847
66.445       6.372  2410   447.5( 750) 1.3144 24.001 2562 1.293 3313 2.446 0.13607 14.054 0.4032   2105  7.006 149.6 0.52 0.17
NOZZLE   AE        45   38    4
88.681      16.941  2531   489.5( 788) 1.3103 24.001 2621
88.681       0.324   911   -37.0( 266) 1.3830 24.001 1616 3.177 5133 2.384 0.02832 14.054 1.9372   2403  2.259 171.0 0.82 0.17
NOZZLE   PO        46   39    4
88.681      16.941  2531   489.5( 788) 1.3103 24.001 2621
88.681       0.154   740   -87.7( 215) 1.3906 24.001 1460 3.680 5374 2.384 0.01735 14.054 3.1626   2472  1.449 175.9 0.52 0.17
NOZZLE   AE REGEN  47   40    4
88.681      16.941  3027   666.9( 965) 1.2930 24.000 2847
88.681       0.386  1181    44.7( 348) 1.3666 24.001 1830 3.050 5580 2.448 0.02832 14.054 1.9373   2629  2.456 187.0 0.52 0.17
NOZZLE   PO REGEN  48   41    4
88.681      16.941  3027   666.9( 965) 1.2930 24.000 2847
88.681       0.154   918   -34.8( 268) 1.3827 24.001 1622 3.654 5926 2.448 0.01542 14.054 3.5583   2729  1.420 194.2 0.52 0.17
FICTIVE COMBUSTR   66   59    0
66.445     190.129  4486   489.5(1459) 1.2118 26.116 3217
66.445       0.154   890  -779.0( 245) 1.3674 26.207 1519 5.244 7967 2.302 0.02336 14.054 2.3485   3573  2.693 254.2 0.62 1.00
FICTIVE NOZZLE     67   60    0
88.681      22.438  2487   474.3( 776) 1.3118 24.001 2600
88.681       0.275   789   -73.4( 230) 1.3887 24.001 1506 3.476 5235 2.354 0.02833 14.054 1.9371   2423  2.304 172.4 0.52 0.17
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READING = 0091 BLOCK = 105 TIME = 203.551 MACH 7.3 PT = 995.749 TT = 3070.5

XARB	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAVALL	P-IB/P80	P-IB/P10	P-OB/P80	P-OB/P10
6.981E-01	6.900E-01	0.000	-2.702E-01	0.000	0.000	0.000	2.070E-02	4.484E 00	6.929E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.630E 02	4.484E 00	6.929E-04	0.000	0.000
3.070E 01	1.515E 00	0.000	-1.123E 02	0.000	0.000	0.000	5.053E 02	9.846E 00	1.521E-03	0.000	0.000
3.508E 01	1.973E 00	0.000	-2.254E 02	0.000	0.000	0.000	6.804E 02	1.282E 01	1.982E-03	0.000	0.000
3.555E 01	2.210E 00	0.000	-2.444E 02	0.000	0.000	0.000	7.013E 02	1.436E 01	2.219E-03	0.000	0.000
3.606E 01	2.485E 00	0.000	-2.683E 02	-1.670E 02	-1.670E 02	0.000	7.246E 02	1.615E 01	2.496E-03	0.000	0.000
3.648E 01	2.286E 00	0.000	-2.887E 02	-1.711E 02	-1.711E 02	0.000	7.443E 02	1.486E 01	2.296E-03	0.000	0.000
3.658E 01	2.355E 00	3.189E 00	-3.267E 02	-1.721E 02	-1.721E 02	0.000	7.491E 02	1.530E 01	2.365E-03	2.072E 01	3.202E-03
3.659E 01	2.359E 00	3.216E 00	-3.268E 02	-1.722E 02	-1.722E 02	0.000	7.494E 02	1.533E 01	2.369E-03	2.090E 01	3.230E-03
3.701E 01	2.640E 00	5.150E 00	-3.283E 02	-1.764E 02	-1.764E 02	0.000	7.931E 02	1.716E 01	2.651E-03	3.347E 01	5.172E-03
3.725E 01	2.591E 00	6.275E 00	-3.267E 02	-1.790E 02	-1.790E 02	0.000	8.188E 02	1.684E 01	2.602E-03	4.078E 01	6.302E-03
3.803E 01	2.435E 00	8.491E 00	-3.104E 02	-1.876E 02	-1.876E 02	0.000	9.020E 02	1.582E 01	2.445E-03	5.518E 01	8.527E-03
3.871E 01	7.674E 00	1.045E 01	-3.189E 02	-2.597E 02	-2.005E 02	-5.922E 01	9.785E 02	4.987E 01	7.707E-03	6.791E 01	1.049E-02
3.875E 01	7.942E 00	1.040E 01	-3.201E 02	-2.625E 02	-2.014E 02	-6.114E 01	9.825E 02	5.161E 01	7.976E-03	6.757E 01	1.044E-02
3.901E 01	9.930E 00	1.001E 01	-3.303E 02	-2.845E 02	-2.091E 02	-7.536E 01	1.012E 03	6.453E 01	9.972E-03	6.502E 01	1.005E-02
3.950E 01	1.393E 01	9.267E 00	-3.578E 02	-3.306E 02	-2.285E 02	-1.021E 02	1.068E 03	9.056E 01	1.399E-02	6.022E 01	9.306E-03
3.974E 01	1.320E 01	8.912E 00	-3.703E 02	-3.550E 02	-2.402E 02	-1.148E 02	1.095E 03	8.577E 01	1.325E-02	5.792E 01	8.951E-03
4.000E 01	1.237E 01	1.047E 01	-3.786E 02	-3.846E 02	-2.553E 02	-1.292E 02	1.126E 03	8.036E 01	1.242E-02	6.804E 01	1.051E-02
4.021E 01	1.525E 01	1.167E 01	-3.844E 02	-4.084E 02	-2.682E 02	-1.403E 02	1.150E 03	9.911E 01	1.532E-02	7.587E 01	1.172E-02
4.040E 01	1.799E 01	1.431E 01	-3.902E 02	-4.315E 02	-2.807E 02	-1.508E 02	1.172E 03	1.169E 02	1.807E-02	9.302E 01	1.437E-02
4.041E 01	1.814E 01	1.445E 01	-3.904E 02	-4.327E 02	-2.814E 02	-1.514E 02	1.174E 03	1.179E 02	1.821E-02	9.390E 01	1.451E-02
4.071E 01	2.243E 01	1.857E 01	-3.987E 02	-4.696E 02	-3.018E 02	-1.678E 02	1.209E 03	1.458E 02	2.252E-02	1.207E 02	1.865E-02
4.121E 01	2.932E 01	2.450E 00	-4.396E 02	-5.304E 02	-3.366E 02	-1.938E 02	1.267E 03	1.906E 02	2.945E-02	1.592E 01	2.460E-03
4.150E 01	3.347E 01	2.439E 00	-4.838E 02	-5.680E 02	-3.589E 02	-2.091E 02	1.302E 03	2.175E 02	3.362E-02	1.585E 01	2.449E-03
4.246E 01	4.502E 01	2.402E 00	-6.446E 02	-7.186E 02	-4.368E 02	-2.817E 02	1.416E 03	2.926E 02	4.522E-02	1.561E 01	2.412E-03
4.269E-01	4.621E 01	2.393E 00	-6.852E 02	-7.623E 02	-4.564E 02	-3.059E 02	1.443E 03	3.003E 02	4.641E-02	1.555E 01	2.404E-03
4.270E 01	4.626E 01	2.393E 00	-6.870E 02	-7.643E 02	-4.572E 02	-3.070E 02	1.444E 03	3.006E 02	4.646E-02	1.555E 01	2.403E-03
4.276E 01	4.660E 01	2.391E 00	-6.983E 02	-7.771E 02	-4.628E 02	-3.103E 02	1.452E 03	3.028E 02	4.679E-02	1.554E 01	2.401E-03
4.431E 01	5.455E 01	1.949E 01	-9.103E 02	-1.113E 03	-5.959E 02	-5.168E 02	1.638E 03	3.545E 02	5.478E-02	1.266E 02	1.957E-02
4.480E 01	5.707E 01	2.491E 01	-9.700E 02	-1.228E 03	-6.386E 02	-5.896E 02	1.698E 03	3.709E 02	5.732E-02	1.619E 02	2.501E-02
4.549E 01	4.703E 01	3.249E 01	-1.026E 03	-1.389E 03	-6.972E 02	-6.917E 02	1.782E 03	3.057E 02	4.723E-02	2.111E 02	3.263E-02
4.620E 01	3.655E 01	2.920E 01	-1.031E 03	-1.546E 03	-7.558E 02	-7.905E 02	1.869E 03	2.375E 02	3.671E-02	1.897E 02	2.932E-02
4.626E 01	3.567E 01	2.892E 01	-1.029E 03	-1.559E 03	-7.606E 02	-7.980E 02	1.877E 03	2.318E 02	3.582E-02	1.879E 02	2.904E-02
4.731E 01	2.027E 01	2.409E 01	-9.800E 02	-1.760E 03	-8.415E 02	-9.180E 02	2.006E 03	1.318E 02	2.036E-02	1.565E 02	2.419E-02
4.811E 01	1.802E 01	2.041E 01	-9.220E 02	-1.901E 03	-8.996E 02	-1.001E 03	2.105E 03	1.171E 02	1.810E-02	1.326E 02	2.049E-02
4.872E 01	1.757E 01	1.757E 01	-8.679E 02	-2.007E 03	-9.420E 02	-1.065E 03	2.182E 03	1.142E 02	1.765E-02	1.142E 02	1.765E-02
5.017E 01	1.157E 01	1.157E 01	-7.590E 02	-2.225E 03	-1.035E 03	-1.190E 03	2.363E 03	7.519E 01	1.162E-02	7.519E 01	1.162E-02
5.071E 01	9.375E 00	9.375E 00	-7.301E 02	-2.288E 03	-1.066E 03	-1.222E 03	2.429E 03	6.093E 01	9.415E-03	6.093E 01	9.415E-03
5.211E 01	8.100E 00	8.100E 00	-6.655E 02	-2.435E 03	-1.142E 03	-1.292E 03	2.607E 03	5.264E 01	8.135E-03	5.264E 01	8.135E-03
5.421E 01	6.150E 00	6.150E 00	-5.870E 02	-2.613E 03	-1.238E 03	-1.375E 03	2.873E 03	3.997E 01	6.176E-03	3.997E 01	6.176E-03
5.471E 01	4.808E 00	4.808E 00	-5.728E 02	-2.650E 03	-1.258E 03	-1.393E 03	2.937E 03	3.125E 01	4.829E-03	3.125E 01	4.829E-03
5.546E 01	4.643E 00	4.643E 00	-5.545E 02	-2.703E 03	-1.285E 03	-1.418E 03	3.033E 03	3.017E 01	4.663E-03	3.017E 01	4.663E-03
5.576E 01	4.578E 00	4.578E 00	-5.475E 02	-2.722E 03	-1.295E 03	-1.428E 03	3.070E 03	2.975E 01	4.597E-03	2.975E 01	4.597E-03
5.622E 01	2.381E 00	4.475E 00	-4.990E 02	-2.752E 03	-1.310E 03	-1.442E 03	3.102E 03	1.548E 01	2.391E-03	2.908E 01	4.494E-03
5.765E 01	2.190E 00	2.190E 00	-4.753E 02	-2.835E 03	-1.354E 03	-1.481E 03	3.210E 03	1.423E 01	2.199E-03	1.423E 01	2.199E-03
5.771E 01	4.000E 00	2.102E 00	-4.747E 02	-2.837E 03	-1.355E 03	-1.482E 03	3.217E 03	2.600E 01	4.017E-03	1.366E 01	2.111E-03
5.785E 01	4.000E 00	1.877E 00	-4.734E 02	-2.845E 03	-1.359E 03	-1.485E 03	3.234E 03	2.600E 01	4.017E-03	1.220E 01	1.885E-03
5.792E 01	1.749E 00	1.749E 00	-4.727E 02	-2.848E 03	-1.361E 03	-1.487E 03	3.245E 03	1.137E 01	1.756E-03	1.137E 01	1.756E-03
5.821E 01	1.300E 00	1.300E 00	-4.707E 02	-2.862E 03	-1.368E 03	-1.494E 03	3.280E 03	8.448E 00	1.306E-03	8.448E 00	1.306E-03
5.843E 01	1.383E 00	1.383E 00	-4.694E 02	-2.872E 03	-1.374E 03	-1.498E 03	3.309E 03	8.990E 00	1.389E-03	8.990E 00	1.389E-03
5.915E 01	1.650E 00	1.650E 00	-4.653E 02	-2.902E 03	-1.389E 03	-1.513E 03	3.402E 03	1.072E 01	1.657E-03	1.072E 01	1.657E-03
6.017E 01	8.750E-01	8.750E-01	-4.623E 02	-2.939E 03	-1.407E 03	-1.532E 03	3.532E 03	5.686E 00	8.787E-04	5.686E 00	8.787E-04
6.218E 01	4.000E 00	4.000E 00	-4.618E 02	-3.003E 03	-1.430E 03	-1.573E 03	3.790E 03	2.600E 01	4.017E-03	2.600E 01	4.017E-03
6.360E 01	3.119E 00	3.119E 00	-4.618E 02	-3.045E 03	-1.441E 03	-1.603E 03	3.972E 03	2.027E 01	3.132E-03	2.027E 01	3.132E-03
6.607E 01	3.198E 00	3.198E 00	-4.618E 02	-3.123E 03	-1.461E 03	-1.663E 03	4.289E 03	2.078E 01	3.211E-03	2.078E 01	3.211E-03
6.644E 01	6.530E 00	3.210E 00	-4.618E 02	-3.137E 03	-1.463E 03	-1.673E 03	4.337E 03	4.244E 01	6.558E-03	2.086E 01	3.224E-03

ORIGINAL PAGE IS OF POOR QUALITY

READING = 0091 BLOCK = 105 TIME = 203.551 MACH 7.3 PT = 995.749 TT = 3070.5

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OE	C(WALL)	P-IB/PSO	P-IF/PTO	P-OB/PSO	P-OE/PTO
6.649E 01	6.530E 00	3.211E 00	-4.618E 02	-3.138E 03	-1.464E 03	-1.675E 03	4.342E 03	4.244E 01	6.558E-03	2.087E 01	3.225E-03
6.668E 01	6.182E 00	3.217E 00	-4.618E 02	-3.140E 03	-1.465E 03	-1.681E 03	4.366E 03	4.017E 01	6.208E-03	2.091E 01	3.231E-03
6.835E 01	3.290E 00	3.540E 00	-4.183E 02	-3.200E 03	-1.477E 03	-1.722E 03	4.584E 03	2.130E 01	3.304E-03	2.301E 01	3.555E-03
6.901E 01	2.874E 00	3.000E 00	-3.541E 02	-3.217E 03	-1.482E 03	-1.735E 03	4.665E 03	1.867E 01	2.886E-03	1.950E 01	3.013E-03
6.978E 01	2.395E 00	2.553E 00	-2.790E 02	-3.236E 03	-1.487E 03	-1.749E 03	4.760E 03	1.556E 01	2.405E-03	1.659E 01	2.564E-03
7.050E 01	1.875E 00	2.135E 00	-2.207E 02	-3.255E 03	-1.491E 03	-1.763E 03	4.848E 03	1.219E 01	1.883E-03	1.386E 01	2.144E-03
7.111E 01	1.435E 00	1.913E 00	-1.809E 02	-3.269E 03	-1.494E 03	-1.775E 03	4.922E 03	9.326E 00	1.441E-03	1.243E 01	1.921E-03
7.249E 01	8.650E-01	1.411E 00	-1.172E 02	-3.295E 03	-1.500E 03	-1.795E 03	5.088E 03	5.621E 00	8.687E-04	9.172E 00	1.417E-03
7.402E 01	7.226E-01	8.550E-01	-7.207E 01	-3.315E 03	-1.505E 03	-1.810E 03	5.273E 03	4.696E 00	7.257E-04	5.557E 00	8.586E-04
7.492E 01	6.388E-01	2.350E-01	-4.910E 01	-3.326E 03	-1.507E 03	-1.819E 03	5.372E 03	4.151E 00	6.415E-04	1.527E 00	2.360E-04
7.493E 01	6.384E-01	2.322E-01	-4.862E 01	-3.326E 03	-1.507E 03	-1.819E 03	5.372E 03	4.149E 00	6.412E-04	1.509E 00	2.332E-04
7.625E 01	5.150E-01	0.000	-3.644E 01	-3.344E 03	-1.509E 03	-1.835E 03	5.424E 03	3.347E 00	5.172E-04	0.000	0.000
7.910E 01	3.550E-01	0.000	-1.904E 01	-3.347E 03	-1.512E 03	-1.835E 03	5.523E 03	2.307E 00	3.565E-04	0.000	0.000
8.300E 01	2.400E-01	0.000	-6.327E 00	-3.349E 03	-1.514E 03	-1.835E 03	5.627E 03	1.560E 00	2.410E-04	0.000	0.000
8.581E 01	3.200E-01	0.000	-1.062E-01	-3.350E 03	-1.515E 03	-1.835E 03	5.682E 03	2.080E 00	3.214E-04	0.000	0.000
8.867E 01	4.400E-01	0.000	9.063E 00	-3.350E 03	-1.515E 03	-1.835E 03	5.705E 03	2.859E 00	4.419E-04	0.000	0.000
8.868E 01	4.403E-01	0.000	9.066E 00	-3.350E 03	-1.515E 03	-1.835E 03	5.705E 03	2.861E 00	4.421E-04	0.000	0.000

READING # 0091 BLOCK # 105 TIME = 203.551 MACH 7.3 PT = 995.749 TI = 3070.3 PAGE 6

X	DDRAG	CDRAG	CF	HC
4.040E 01	9.346E 01	9.346E 01	2.501E-03	3.610E-02
4.041E 01	1.536E-01	9.362E 01	3.090E-03	4.115E-02
4.071E 01	4.674E 00	9.629E 01	2.772E-03	5.231E-02
4.121E 01	7.267E 00	1.056E 02	2.973E-03	4.163E-02
4.150E 01	4.344E 00	1.099E 02	2.840E-03	4.641E-02
4.246E 01	1.240E 01	1.223E 02	3.084E-03	4.802E-02
4.269E 01	2.812E 00	1.251E 02	3.525E-03	4.385E-02
4.270E 01	1.199E-01	1.252E 02	3.216E-03	4.850E-02
4.276E 01	7.414E-01	1.260E 02	3.179E-03	4.903E-02
4.431E 01	1.400E 01	1.400E 02	3.525E-03	4.184E-02
4.480E 01	2.904E 00	1.429E 02	3.670E-03	3.674E-02
4.549E 01	3.620E 00	1.465E 02	3.985E-03	3.114E-02
4.620E 01	4.070E 00	1.506E 02	3.670E-03	3.503E-02
4.626E 01	3.607E-01	1.509E 02	3.624E-03	3.553E-02
4.731E 01	7.063E 00	1.580E 02	3.468E-03	3.418E-02
4.811E 01	5.852E 00	1.639E 02	3.379E-03	3.260E-02
4.872E 01	4.754E 00	1.686E 02	3.972E-03	2.478E-02
5.017E 01	1.069E 01	1.793E 02	3.281E-03	2.425E-02
5.071E 01	3.402E 00	1.827E 02	3.111E-03	2.243E-02
5.211E 01	8.170E 00	1.909E 02	2.994E-03	2.035E-02
5.421E 01	1.041E 01	2.013E 02	2.896E-03	1.680E-02
5.471E 01	2.269E 00	2.035E 02	2.817E-03	1.454E-02
5.546E 01	3.272E 00	2.068E 02	2.781E-03	1.413E-02
5.576E 01	1.231E 00	2.080E 02	2.768E-03	1.397E-02
5.622E 01	9.019E-01	2.089E 02	2.658E-03	1.099E-02
5.765E 01	2.688E 00	2.116E 02	2.594E-03	8.098E-03
5.771E 01	1.688E-01	2.118E 02	2.603E-03	1.012E-02
5.785E 01	4.149E-01	2.122E 02	2.595E-03	9.871E-03
5.792E 01	2.720E-01	2.125E 02	3.101E-03	6.084E-03
5.821E 01	1.010E 00	2.135E 02	2.686E-03	5.479E-03
5.843E 01	7.491E-01	2.143E 02	2.586E-03	5.852E-03
5.915E 01	2.299E 00	2.166E 02	2.542E-03	6.646E-03
6.017E 01	3.267E 00	2.198E 02	2.615E-03	4.178E-03
6.218E 01	6.202E 00	2.260E 02	2.594E-03	1.196E-02
6.360E 01	4.367E 00	2.304E 02	2.792E-03	9.669E-03
6.607E 01	7.570E 00	2.380E 02	2.573E-03	1.033E-02
6.644E 01	1.018E 00	2.390E 02	2.780E-03	1.264E-02
6.649E 01	1.064E-01	2.391E 02	3.055E-03	1.141E-02
6.668E 01	5.552E-01	2.396E 02	3.044E-03	1.119E-02
6.835E 01	4.477E 00	2.441E 02	2.964E-03	9.310E-03
6.901E 01	1.587E 00	2.457E 02	2.930E-03	8.481E-03
6.978E 01	1.734E 00	2.474E 02	2.890E-03	7.594E-03
7.050E 01	1.484E 00	2.489E 02	2.844E-03	6.607E-03
7.111E 01	1.144E 00	2.501E 02	2.809E-03	5.846E-03
7.249E 01	2.235E 00	2.523E 02	2.733E-03	4.473E-03
7.402E 01	2.018E 00	2.543E 02	2.661E-03	3.441E-03
7.492E 01	8.271E-01	2.551E 02	2.551E-03	2.243E-03
7.493E 01	1.107E-03	2.551E 02	2.551E-03	2.237E-03
7.625E 01	3.732E-01	2.555E 02	2.575E-03	2.520E-03
7.910E 01	6.626E-01	2.562E 02	2.497E-03	1.912E-03
8.300E 01	5.515E-01	2.567E 02	2.415E-03	1.425E-03
8.581E 01	2.748E-01	2.570E 02	2.452E-03	1.749E-03
8.867E 01	1.385E-01	2.571E 02	2.494E-03	2.196E-03
8.868E 01	0.000	2.571E 02	2.494E-03	2.197E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-251.	(LBF)
MEASURED THRUST	162.	(LBF)
CALCULATED SPECIFIC IMPULSE	-1049.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	680.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.1729	
MEASURED THRUST COEFFICIENT	0.1120	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	2651.	(LBF)
NET THRUST	-23.	(LBF)
SPECIFIC IMPULSE	-95.	(LBF-SEC/LBM)
THRUST COEFFICIENT	-.0156	

MOMENTUM AND FORCES

INLET FRICTION DRAG	93.5	(LBF)
INLET MOMENTUM CHANGE	-483.7	(LBF)
COMBUSTOR FRICTION DRAG	145.5	(LBF)
COMBUSTOR STRUT DRAG	2.63	(LBF)
COMBUSTOR MOMENTUM CHANGE	-220.	(LBF)
NOZZLE FRICTION DRAG	18.17	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	453.	(LBF)
NOZZLE PRESSURE INTEGRAL	471.	(LBF)
EXTERNAL FRICTION DRAG	39.22	(LBF)
EXTERNAL PRESSURE INTEGRAL	-649.	(LBF)
TOTAL EXTERNAL DRAG	-688.	(LBF)
TOTAL STRUT DRAG	2.63	(LBF)
CAVITY FORCE	-535.	(LBF)
CALCULATED LOAD CELL FORCE	-1474.	(LBF)
MEASURED LOAD CELL FORCE	-1059.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0,	0.0,

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7050	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.589	(IN)
NOZZLE SHROUD TRAILING EDGE	74.929	(IN)
NOZZLE PLUG TRAILING EDGE	88.681	(IN)
STRUT LEADING EDGE	57.845	(IN)
STRUT TRAILING EDGE	66.445	(IN)
COMBUSTOR EXIT	66.445	(IN)

INLET

ANGLE OF ATTACK	3.000	(DEGREES)
MASS FLOW RATIO	0.9039	
ADDITIVE DRAG COEFFICIENT	0.0087	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0869	
DELTA PT2	0.0873	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.1909	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.0882	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8752	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9049	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9071	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8711	
ENTHALPY AT PO - SUPERSONIC	-19.63	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	7.36	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0173
EQUIVALENCE RATIO	0.522
COMBUSTOR EFFICIENCY	0.168
TOTAL PRESSURE RATIO	0.0891
COMBUSTOR EFFECTIVENESS	0.2008
INJECTOR DISCHARGE COEFFICIENTS	0.930[illegible], [illegible]

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	1.0065
NOZZLE COEFFICIENT - CT	0.9493
PROCESS EFFICIENCY	1.0777
KINETIC ENERGY EFFICIENCY	1.0169

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.700	A
1B	42.690	B
1C	44.500	
2A	50.165	
2C	46.250	
3A	55.455	
3B	57.640	
[illegible]	46.190	

ORIGINAL PAGE IS OF POOR QUALITY

Reading 91

t = 216.15 sec.

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READING = 0091  BLOCK = 119  TIME = 216.151  MACH  7.3  PT = 995.999  TT = 3089.3                    2/13/75          PAGE  1
                                                RAMJET PERFORMANCE

                                                  S U M M A R Y   R E P O R T

                 P       T        H              GAMMA   MOLWT SONV  MACH  VEL    S      W/A       W      A/AC    MOMTM    G     IVAC  PHI  ETAC
WIND TUNNEL              1      0   6
 0.000     995.999 3089    696.7( 821) 1.2900 28.956 2616
 0.000       0.154  299    -57.3(  72) 1.3965 28.955  846 7.257 6143 1.816 0.05925 13.717 0.9039   2654  5.656 193.5
SPIKE TIP NS             2      0   7
 0.600      11.200 3089    696.7( 821) 1.2896 28.955 2615
 0.600      10.317 3032    679.5( 804) 1.2915 28.955 2593 0.358  929 2.124 0.05925 13.717 0.9039   2785  0.856 203.0
WIND TUNNEL              3      0   0
 0.000     995.999 3089    696.7( 821) 1.2900 28.956 2616
 0.000       0.167  306    -55.6(  73) 1.3968 28.955  856 7.165 6136 1.816 0.06275 14.527 0.9039   2809  5.983 193.4
SPIKE TIP NS             4      0   0
 0.600      11.200 3089    696.7( 821) 1.2896 28.955 2615
 0.600      10.196 3024    677.0( 802) 1.2918 28.955 2590 0.384  993 2.124 0.06275 14.527 0.9039   2809  0.969 193.4
INLET THROAT             5      0   3
40.400     232.982 2933    649.3( 775) 1.2949 28.955 2554
40.400      10.558 1374    208.9( 338) 1.3553 28.955 1788 2.625 4694 1.900 0.67565 13.717 0.0793   2216 49.287 161.5
INLET UPNRBK             6      0   3
40.400     232.982 2933    649.3( 775) 1.2949 28.955 2554
40.400       9.081 1321    195.0( 324) 1.3585 28.955 1755 2.716 4768 1.900 0.61423 13.717 0.0872   2235 45.509 163.0
INLET DNNRBK             7      0   4
40.400      89.265 2933    649.3( 775) 1.2949 28.955 2554
40.400      77.071 2836    620.2( 746) 1.2980 28.955 2514 0.480 1206 1.966 0.61423 13.717 0.0872   2235 11.514 163.0
COMBUSTOR           0    8      1   3
40.410     232.986 2933    649.2( 775) 1.2949 28.955 2554
40.410      10.552 1374    208.9( 338) 1.3553 28.955 1788 2.625 4694 1.900 0.67556 13.717 0.0793   2215 49.280 161.5
COMBUSTOR           0    9      2   3
40.715     232.753 2924    646.8( 772) 1.2952 28.955 2550
40.715      10.590 1371    208.2( 337) 1.3554 28.955 1786 2.623 4685 1.900 0.67801 13.717 0.0790   2212 49.368 161.2
COMBUSTOR           0   10      3   4
41.205     215.415 2911    642.8( 769) 1.2956 28.955 2545
41.205      10.914 1403    216.5( 345) 1.3535 28.955 1806 2.558 4618 1.904 0.67325 13.717 0.0795   2191 48.322 159.8
COMBUSTOR           0   11      4   4
41.500     196.827 2903    640.3( 766) 1.2959 28.955 2542
41.500      11.304 1445    227.6( 356) 1.3511 28.955 1831 2.462 4545 1.909 0.66624 13.717 0.0804   2170 47.056 158.2
COMBUSTOR           0   12      5   5
42.460     156.451 2875    632.0( 758) 1.2967 28.955 2530
42.460      11.786 1533    251.0( 380) 1.3462 28.955 1882 2.320 4366 1.922 0.62899 13.717 0.0851   2119 42.682 154.5
COMBUSTOR           0   13      6  21
42.690      86.858 2813    645.0( 819) 1.3015 26.034 2644
42.690       6.111 1462    224.1( 401) 1.3531 26.034 1944 2.361 4580 2.135 0.62720 13.838 0.0861   2109 44.734 152.4 0.27 0.07
COMBUSTOR           0   14      7  21
42.700      98.176 2723    644.9( 791) 1.3057 25.942 2610
42.700       6.119 1363    224.3( 373) 1.3595 25.941 1884 2.435 4588 2.117 0.62711 13.838 0.0862   2108 44.713 152.4 0.27 0.01
COMBUSTOR           0   15      8  21
42.765      99.437 2708    644.4( 787) 1.3064 25.928 2605
42.765       6.175 1353    225.6( 370) 1.3602 25.928 1878 2.437 4578 2.114 0.62479 13.838 0.0865   2106 44.447 152.2 0.27 0.00
COMBUSTOR           0   16      9   4
44.310      98.511 2825    633.6( 822) 1.3006 26.082 2646
44.310      15.321 1801    310.0( 501) 1.3364 26.082 2142 1.878 4024 2.125 0.57766 13.838 0.0935   2098 36.120 151.6 0.27 0.11
COMBUSTOR           0   17     10   4
44.800      86.953 3045    630.9( 890) 1.2902 26.323 2724
44.800      18.222 2110    329.4( 593) 1.3220 26.324 2295 1.692 3884 2.152 0.57120 13.838 0.0946   2112 34.474 152.6 0.27 0.27
COMBUSTOR           0   18     11   5
45.485      77.262 3394    627.2( 909) 1.2728 26.720 2835
45.485      23.519 2603    363.1( 742) 1.3003 26.724 2510 1.449 3635 2.184 0.56792 13.838 0.0951   2136 32.082 154.4 0.27 0.53
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ORIGINAL PAGE IS OF POOR QUALITY

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	D	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 5														
46.190	74.988	3326	629.8(1029)	1.2772	25.280	2890											
46.190	24.167	2578	368.1(774)	1.3031	25.283	2570	1.408	3619	2.277	0.55500	13.906	0.0978	2169	31.210	156.0	0.42	0.37
COMBUSTOR	0	20	13 0														
46.200	75.053	3326	629.7(1029)	1.2772	25.280	2890											
46.200	24.176	2577	367.9(774)	1.3031	25.283	2570	1.408	3619	2.277	0.55546	13.906	0.0977	2169	31.241	156.0	0.42	0.37
COMBUSTOR	0	21	14 5														
46.250	73.897	3068	633.1(1002)	1.2909	23.541	2892											
46.250	24.222	2367	378.3(751)	1.3147	23.542	2564	1.393	3570	2.372	0.55653	13.989	0.0981	2161	30.879	154.5	0.60	0.21
COMBUSTOR	0	22	15 2														
46.260	73.835	3071	633.0(1003)	1.2907	23.544	2893											
46.260	24.232	2370	378.3(752)	1.3146	23.545	2565	1.392	3570	2.372	0.55613	13.989	0.0982	2162	30.853	154.5	0.60	0.21
COMBUSTOR	0	23	16 4														
47.310	67.912	3292	618.6(1079)	1.2794	23.797	2966											
47.310	25.196	2633	374.1(840)	1.3022	23.799	2676	1.307	3498	2.395	0.51553	13.989	0.1059	2204	28.022	157.6	0.60	0.31
COMBUSTOR	0	24	17 3														
48.110	68.005	3249	605.4(1065)	1.2811	23.788	2949											
48.110	19.642	2448	311.5(775)	1.3087	23.791	2587	1.482	3835	2.390	0.47383	13.989	0.1153	2247	28.241	160.7	0.60	0.31
COMBUSTOR	0	25	18 4														
48.725	63.256	3418	595.3(1122)	1.2721	23.984	3002											
48.725	18.575	2601	291.2(826)	1.3009	23.989	2648	1.473	3901	2.406	0.43246	13.989	0.1263	2297	26.217	164.2	0.60	0.38
COMBUSTOR	0	26	19 4														
50.175	59.502	3520	578.3(1157)	1.2659	24.134	3030											
50.175	13.095	2517	204.6(704)	1.3019	24.142	2598	1.665	4324	2.416	0.35145	13.989	0.1554	2401	23.618	171.7	0.60	0.43
COMBUSTOR	0	27	20 4														
50.705	60.611	3467	575.5(1138)	1.2687	24.088	3013											
50.705	11.092	2369	170.2(745)	1.3077	24.094	2529	1.781	4503	2.411	0.32869	13.989	0.1662	2430	23.003	173.7	0.60	0.42
COMBUSTOR	0	28	21 4														
52.115	56.071	3562	570.6(1171)	1.2632	24.199	3040											
52.115	9.050	2375	130.4(743)	1.3061	24.208	2524	1.859	4694	2.422	0.28014	13.989	0.1950	2493	20.434	178.2	0.60	0.46
COMBUSTOR	0	29	22 5														
54.215	63.242	3326	561.5(1093)	1.2757	23.872	2973											
54.215	5.525	1888	43.1(582)	1.3274	23.876	2284	2.230	5093	2.405	0.23029	14.031	0.2379	2558	18.228	182.3	0.61	0.37
COMBUSTOR	0	30	23 4														
54.715	54.993	3476	559.7(1145)	1.2675	24.030	3019											
54.715	5.917	2096	54.1(651)	1.3172	24.036	2390	2.105	5030	2.426	0.22088	14.031	0.2480	2569	17.266	183.1	0.61	0.43
COMBUSTOR	0	31	24 4														
55.465	56.794	3425	556.7(1127)	1.2702	23.985	3003											
55.465	5.163	1976	30.3(610)	1.3225	23.990	2327	2.206	5133	2.420	0.20821	14.031	0.2631	2586	16.608	184.3	0.61	0.41
COMBUSTOR	0	32	25 4														
55.760	58.050	3396	555.6(1117)	1.2717	23.959	2994											
55.760	4.867	1918	20.4(591)	1.3251	23.964	2296	2.254	5175	2.416	0.20365	14.031	0.2690	2592	16.378	184.7	0.61	0.40
COMBUSTOR	0	33	26 4														
56.225	51.001	3464	554.0(1141)	1.2678	24.033	3014											
56.225	3.672	1894	-15.8(582)	1.3253	24.040	2278	2.344	5340	2.431	0.16108	14.031	0.3401	2649	13.367	188.8	0.61	0.43
COMBUSTOR	0	34	27 6														
57.650	76.320	3161	549.6(1034)	1.2836	23.739	2915											
57.650	2.349	1360	-79.8(411)	1.3547	23.741	1964	2.857	5612	2.376	0.14888	14.031	0.3679	2669	12.985	190.2	0.61	0.32
COMBUSTOR	0	35	28 5														
57.705	50.322	3464	549.4(1141)	1.2676	24.045	3013											
57.705	3.247	1844	-37.0(565)	1.3273	24.051	2249	2.409	5417	2.432	0.14851	14.031	0.3689	2669	12.503	190.2	0.61	0.43
COMBUSTOR	0	36	29 4														
57.845	51.397	3441	549.0(1133)	1.2689	24.022	3006											
57.845	3.147	1804	-41.5(552)	1.3292	24.028	2228	2.440	5436	2.428	0.14739	14.031	0.3717	2670	12.451	190.3	0.61	0.42
COMBUSTOR	0	37	30 15														
57.925	100.017	3029	548.8(988)	1.2900	23.613	2868											
57.925	1.953	1142	-101.0(343)	1.3682	23.614	1814	3.144	5702	2.343	0.14907	14.031	0.3675	2671	13.210	190.3	0.61	0.28

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                P        T     H              GAMMA  MOLWT SONV  MACH  VEL   S      W/A       W      A/AC    MOMTM   F     TVAC  PHI  ETAC
COMBUSTOR       0   38   31   5
58.205    142.390 2895  548.0( 942) 1.2963 23.488 2818
58.205      1.550  918 -122.3( 275) 1.3812 23.488 1639 3.534 5791 2.301 0.14855 14.031 0.3688   2672 13.370 190.4 0.61 0.23
COMBUSTOR       0   39   32   4
58.431    134.479 2916  547.3( 950) 1.2952 23.510 2826
58.431      1.604  951 -120.8( 285) 1.3794 23.510 1666 3.472 5782 2.308 0.14833 14.031 0.3693   2673 13.328 190.5 0.61 0.24
COMBUSTOR       0   40   33   4
59.155    110.560 2993  545.4( 976) 1.2916 23.588 2854
59.155      1.775 1067 -114.6( 320) 1.3726 23.588 1757 3.271 5747 2.331 0.14597 14.031 0.3753   2677 13.036 190.8 0.61 0.27
COMBUSTOR       0   41   34   6
60.175    186.866 2823  542.4( 917) 1.2998 23.434 2790
60.175      1.275  781 -143.8( 233) 1.3878 23.434 1517 3.864 5860 2.271 0.14504 14.031 0.3777   2679 13.208 190.9 0.61 0.21
COMBUSTOR       0   42   35   7
62.185     33.977 4002  535.9(1331) 1.2319 24.659 3153
62.185      4.987 2692   22.6( 848) 1.2874 24.702 2641 1.919 5068 2.490 0.15009 14.031 0.3650   2676 11.821 190.8 0.61 0.66
COMBUSTOR       0   43   36   3
63.605     35.182 3979  531.4(1322) 1.2337 24.646 3147
63.605      5.056 2659   16.7( 837) 1.2888 24.686 2627 1.932 5075 2.486 0.15416 14.031 0.3553   2673 12.158 190.5 0.61 0.65
COMBUSTOR       0   44   37   5
66.069     26.252 4490  524.8(1505) 1.1896 25.257 3243
66.069      6.903 3571  102.7(1154) 1.2396 25.420 2943 1.562 4596 2.526 0.14612 14.031 0.3749   2667 10.436 190.1 0.61 0.89
COMBUSTOR       0   45   38   4
66.445     23.531 4602  523.9(1545) 1.1781 25.394 3258
66.445      6.963 3792  125.5(1235) 1.2227 25.608 3000 1.488 4465 2.536 0.13585 14.031 0.4032   2666  9.425 190.0 0.61 0.96
COMBUSTOR  REGEN   46   39   3
66.445     23.531 4827  675.1(1634) 1.1640 25.227 3328
66.445      7.608 4117  279.6(1358) 1.1980 25.534 3099 1.436 4449 2.568 0.13585 14.031 0.4032   2726  9.392 194.3 0.61 0.96
NOZZLE  AE         47   40   5
88.681     23.531 4602  523.9(1482) 1.1781 25.394 3258
88.681      0.541 2233 -463.0( 674) 1.2938 25.659 2366 2.971 7027 2.536 0.02828 14.031 1.9371   3333  3.088 237.5 0.61 0.96
NOZZLE  PO         48   41   5
88.681     23.531 4602  523.9(1482) 1.1781 25.394 3258
88.681      0.154 1663 -651.7( 486) 1.3190 25.659 2061 3.721 7670 2.536 0.01178 14.031 4.4500   3528  1.404 251.4 0.61 0.96
NOZZLE  AE REGEN   49   42   5
88.681     23.531 4827  675.1(1634) 1.1640 25.227 3328
88.681      0.587 2494 -372.8( 764) 1.2835 25.659 2491 2.907 7240 2.568 0.02828 14.031 1.9371   3449  3.182 245.8 0.61 0.96
NOZZLE  PO REGEN   50   43   5
88.681     23.531 4827  675.1(1634) 1.1640 25.227 3328
88.681      0.154 1836 -595.6( 542) 1.3104 25.659 2159 3.694 7974 2.568 0.01109 14.031 4.9383   3672  1.375 261.7 0.61 0.96
FICTIVE COMBUSTR   68   61   0
66.445    232.982 4797  523.9(1616) 1.1968 25.622 3338
66.445      0.154  987 -907.8( 269) 1.3610 25.787 1584 5.342 8464 2.357 0.02271 14.031 2.4124   3786  2.987 269.8 0.61 1.00
FICTIVE NOZZLE     69   62   0
88.681     14.460 4532  499.4(1518) 1.1752 25.383 3230
88.681      0.677 2579 -342.7( 794) 1.2803 25.659 2529 2.567 6491 2.569 0.02828 14.031 1.9371   3167  2.853 225.7 0.61 0.96
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READING = 0091 BLOCK = 119 TIME = 216.151 MACH 7.3 PT = 995.999 TT = 3089.3

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/P80	P-IB/PTO	P-OB/P80	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.705E-01	0.000	0.000	0.000	2.470E-02	4.487E 00	6.928E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.434E 02	4.487E 00	6.928E-04	0.000	0.000
3.070E 01	1.515E 00	0.000	-1.123E 02	0.000	0.000	0.000	5.053E 02	9.851E 00	1.521E-03	0.000	0.000
3.508E 01	1.940E 00	0.000	-2.243E 02	0.000	0.000	0.000	6.804E 02	1.261E 01	1.948E-03	0.000	0.000
3.555E 01	2.220E 00	0.000	-2.433E 02	0.000	0.000	0.000	7.013E 02	1.443E 01	2.229E-03	0.000	0.000
3.606E 01	2.490E 00	0.000	-2.672E 02	-3.497E 02	-3.497E 02	0.000	7.246E 02	1.619E 01	2.500E-03	0.000	0.000
3.648E 01	2.238E 00	0.000	-2.874E 02	-3.582E 02	-3.582E 02	0.000	7.443E 02	1.455E 01	2.247E-03	0.000	0.000
3.658E 01	2.316E 00	3.194E 00	-3.254E 02	-3.603E 02	-3.603E 02	0.000	7.491E 02	1.506E 01	2.326E-03	2.077E 01	3.207E-03
3.659E 01	2.321E 00	3.222E 00	-3.254E 02	-3.604E 02	-3.604E 02	0.000	7.494E 02	1.509E 01	2.330E-03	2.095E 01	3.235E-03
3.701E 01	2.640E 00	5.136E 00	-3.269E 02	-3.694E 02	-3.694E 02	0.000	7.931E 02	1.717E 01	2.651E-03	3.340E 01	5.157E-03
3.725E 01	2.472E 00	6.250E 00	-3.250E 02	-3.747E 02	-3.747E 02	0.000	8.188E 02	1.607E 01	2.482E-03	4.064E 01	6.275E-03
3.803E 01	1.940E 00	8.874E 00	-3.023E 02	-3.927E 02	-3.927E 02	0.000	9.020E 02	1.261E 01	1.948E-03	5.770E 01	8.910E-03
3.871E 01	7.518E 00	1.119E 01	-3.045E 02	-4.809E 02	-4.109E 02	-7.000E 01	9.785E 02	4.888E 01	7.548E-03	7.278E 01	1.124E-02
3.875E 01	7.803E 00	1.109E 01	-3.055E 02	-4.842E 02	-4.119E 02	-7.227E 01	9.825E 02	5.074E 01	7.834E-03	7.208E 01	1.113E-02
3.901E 01	9.920E 00	1.028E 01	-3.148E 02	-5.089E 02	-4.199E 02	-8.908E 01	1.012E 03	6.450E 01	9.960E-03	6.684E 01	1.032E-02
3.950E 01	1.414E 01	8.760E 00	-3.431E 02	-5.571E 02	-4.364E 02	-1.207E 02	1.068E 03	9.192E 01	1.419E-02	5.696E 01	8.795E-03
3.974E 01	1.214E 01	8.031E 00	-3.557E 02	-5.809E 02	-4.451E 02	-1.357E 02	1.095E 03	7.896E 01	1.219E-02	5.222E 01	8.063E-03
4.000E 01	9.897E 00	9.980E 00	-3.618E 02	-6.084E 02	-4.557E 02	-1.527E 02	1.126E 03	6.435E 01	9.937E-03	6.489E 01	1.002E-02
4.021E 01	1.049E 01	1.149E 01	-3.630E 02	-6.301E 02	-4.643E 02	-1.658E 02	1.150E 03	6.820E 01	1.053E-02	7.469E 01	1.153E-02
4.040E 01	1.105E 01	1.185E 01	-3.631E 02	-6.510E 02	-4.728E 02	-1.783E 02	1.172E 03	7.186E 01	1.110E-02	7.706E 01	1.190E-02
4.041E 01	1.108E 01	1.187E 01	-3.630E 02	-6.521E 02	-4.732E 02	-1.789E 02	1.174E 03	7.204E 01	1.112E-02	7.718E 01	1.192E-02
4.071E 01	1.196E 01	1.244E 01	-3.627E 02	-6.854E 02	-4.871E 02	-1.983E 02	1.209E 03	7.777E 01	1.201E-02	8.087E 01	1.249E-02
4.121E 01	1.337E 01	2.450E 00	-3.761E 02	-7.401E 02	-5.111E 02	-2.290E 02	1.267E 03	8.696E 01	1.343E-02	1.593E 01	2.460E-03
4.150E 01	1.422E 01	2.445E 00	-3.931E 02	-7.738E 02	-5.267E 02	-2.471E 02	1.302E 03	9.249E 01	1.428E-02	1.590E 01	2.455E-03
4.246E 01	9.400E 00	2.430E 00	-4.318E 02	-8.876E 02	-5.788E 02	-3.088E 02	1.416E 03	6.112E 01	9.438E-03	1.580E 01	2.440E-03
4.269E 01	9.796E 00	2.426E 00	-4.381E 02	-9.148E 02	-5.908E 02	-3.240E 02	1.443E 03	6.369E 01	9.835E-03	1.578E 01	2.436E-03
4.270E 01	9.813E 00	2.426E 00	-4.383E 02	-9.160E 02	-5.913E 02	-3.247E 02	1.444E 03	6.380E 01	9.852E-03	1.577E 01	2.436E-03
4.276E 01	9.925E 00	2.425E 00	-4.401E 02	-9.234E 02	-5.946E 02	-3.289E 02	1.452E 03	6.453E 01	9.964E-03	1.577E 01	2.435E-03
4.431E 01	1.258E 01	1.806E 01	-4.275E 02	-1.073E 03	-6.541E 02	-4.192E 02	1.638E 03	8.181E 01	1.263E-02	1.174E 02	1.813E-02
4.480E 01	1.342E 01	2.302E 01	-4.074E 02	-1.111E 03	-6.662E 02	-4.452E 02	1.698E 03	8.729E 01	1.348E-02	1.497E 02	2.311E-02
4.549E 01	1.709E 01	2.995E 01	-3.744E 02	-1.162E 03	-6.809E 02	-4.816E 02	1.782E 03	1.111E 02	1.716E-02	1.947E 02	3.007E-02
4.619E 01	2.086E 01	2.747E 01	-3.327E 02	-1.241E 03	-6.963E 02	-5.446E 02	1.868E 03	1.356E 02	2.094E-02	1.786E 02	2.759E-02
4.620E 01	2.091E 01	2.744E 01	-3.326E 02	-1.242E 03	-6.966E 02	-5.459E 02	1.869E 03	1.360E 02	2.100E-02	1.784E 02	2.755E-02
4.625E 01	2.118E 01	2.726E 01	-3.291E 02	-1.250E 03	-6.977E 02	-5.524E 02	1.875E 03	1.377E 02	2.127E-02	1.773E 02	2.737E-02
4.626E 01	2.123E 01	2.723E 01	-3.285E 02	-1.252E 03	-6.979E 02	-5.537E 02	1.877E 03	1.381E 02	2.132E-02	1.770E 02	2.734E-02
4.731E 01	2.685E 01	2.354E 01	-2.737E 02	-1.453E 03	-7.215E 02	-7.318E 02	2.006E 03	1.746E 02	2.696E-02	1.531E 02	2.364E-02
4.811E 01	1.855E 01	2.073E 01	-2.219E 02	-1.637E 03	-7.400E 02	-8.971E 02	2.105E 03	1.206E 02	1.862E-02	1.348E 02	2.082E-02
4.872E 01	1.857E 01	1.857E 01	-1.659E 02	-1.779E 03	-7.544E 02	-1.025E 03	2.182E 03	1.208E 02	1.865E-02	1.208E 02	1.865E-02
5.017E 01	1.309E 01	1.309E 01	-4.754E 01	-2.017E 03	-7.894E 02	-1.227E 03	2.363E 03	8.515E 01	1.315E-02	8.515E 01	1.315E-02
5.071E 01	1.109E 01	1.109E 01	-1.413E 01	-2.056E 03	-8.026E 02	-1.253E 03	2.429E 03	7.212E 01	1.114E-02	7.212E 01	1.114E-02
5.211E 01	9.050E 00	9.050E 00	6.033E 01	-2.123E 03	-8.384E 02	-1.285E 03	2.607E 03	5.884E 01	9.086E-03	5.884E 01	9.086E-03
5.421E 01	5.525E 00	5.525E 00	1.406E 02	-2.226E 03	-8.942E 02	-1.332E 03	2.873E 03	3.592E 01	5.547E-03	3.592E 01	5.547E-03
5.471E 01	5.917E 00	5.917E 00	1.554E 02	-2.252E 03	-9.079E 02	-1.344E 03	2.937E 03	3.847E 01	5.940E-03	3.847E 01	5.940E-03
5.546E 01	5.163E 00	5.163E 00	1.769E 02	-2.293E 03	-9.288E 02	-1.364E 03	3.033E 03	3.357E 01	5.184E-03	3.357E 01	5.184E-03
5.576E 01	4.867E 00	4.867E 00	1.845E 02	-2.309E 03	-9.371E 02	-1.372E 03	3.070E 03	3.165E 01	4.887E-03	3.165E 01	4.887E-03
5.622E 01	2.944E 00	4.400E 00	2.422E 02	-2.332E 03	-9.480E 02	-1.384E 03	3.102E 03	1.914E 01	2.956E-03	2.861E 01	4.418E-03
5.765E 01	2.349E 00	2.349E 00	2.662E 02	-2.393E 03	-9.749E 02	-1.418E 03	3.210E 03	1.527E 01	2.358E-03	1.527E 01	2.358E-03
5.771E 01	4.225E 00	2.270E 00	2.668E 02	-2.395E 03	-9.759E 02	-1.419E 03	3.217E 03	2.747E 01	4.242E-03	1.476E 01	2.279E-03
5.785E 01	4.225E 00	2.068E 00	2.682E 02	-2.401E 03	-9.786E 02	-1.422E 03	3.234E 03	2.747E 01	4.242E-03	1.345E 01	2.076E-03
5.792E 01	1.953E 00	1.953E 00	2.691E 02	-2.404E 03	-9.802E 02	-1.424E 03	3.245E 03	1.270E 01	1.961E-03	1.270E 01	1.961E-03
5.821E 01	1.550E 00	1.550E 00	2.713E 02	-2.416E 03	-9.855E 02	-1.430E 03	3.280E 03	1.008E 01	1.556E-03	1.008E 01	1.556E-03
5.843E 01	1.604E 00	1.604E 00	2.729E 02	-2.425E 03	-9.899E 02	-1.435E 03	3.309E 03	1.043E 01	1.610E-03	1.043E 01	1.610E-03
5.915E 01	1.775E 00	1.775E 00	2.775E 02	-2.453E 03	-1.004E 03	-1.449E 03	3.402E 03	1.154E 01	1.782E-03	1.154E 01	1.782E-03
6.017E 01	1.275E 00	1.275E 00	2.810E 02	-2.494E 03	-1.024E 03	-1.470E 03	3.532E 03	8.290E 00	1.280E-03	8.290E 00	1.280E-03
6.218E 01	4.987E 00	4.987E 00	2.817E 02	-2.585E 03	-1.063E 03	-1.522E 03	3.790E 03	3.243E 01	5.008E-03	3.243E 01	5.008E-03
6.360E 01	5.056E 00	5.056E 00	2.817E 02	-2.649E 03	-1.089E 03	-1.560E 03	3.972E 03	3.288E 01	5.077E-03	3.288E 01	5.077E-03

XABS	P-IP	P-OB	PPA	COX	G-IP	G-OB	CAWALL	P-IP/PSO	P-IP/PTO	P-OB/PSO	P-OB/PTO
6.607E 01	6.903E 00	6.903E 00	2.817E 02	-2.742E 03	-1.123E 03	-1.619E 03	4.289E 03	4.489E 01	6.931E-03	4.489E 01	6.931E-03
6.644E 01	6.740E 00	7.185E 00	2.817E 02	-2.754E 03	-1.127E 03	-1.627E 03	4.337E 03	4.382E 01	6.767E-03	4.672E 01	7.214E-03
6.649E 01	6.740E 00	7.215E 00	2.817E 02	-2.756E 03	-1.127E 03	-1.628E 03	4.342E 03	4.382E 01	6.767E-03	4.691E 01	7.244E-03
6.668E 01	6.446E 00	7.365E 00	2.817E 02	-2.762E 03	-1.130E 03	-1.633E 03	4.368E 03	4.191E 01	6.472E-03	4.789E 01	7.395E-03
6.835E 01	4.005E 00	3.320E 00	3.407E 02	-2.821E 03	-1.151E 03	-1.670E 03	4.584E 03	2.604E 01	4.021E-03	2.159E 01	3.333E-03
6.901E 01	3.288E 00	3.555E 00	4.124E 02	-2.848E 03	-1.162E 03	-1.686E 03	4.665E 03	2.138E 01	3.302E-03	2.312E 01	3.569E-03
6.978E 01	2.465E 00	2.971E 00	4.971E 02	-2.881E 03	-1.175E 03	-1.707E 03	4.760E 03	1.603E 01	2.475E-03	1.932E 01	2.983E-03
7.050E 01	1.888E 00	2.425E 00	5.600E 02	-2.914E 03	-1.186E 03	-1.728E 03	4.848E 03	1.228E 01	1.896E-03	1.577E 01	2.435E-03
7.111E 01	1.400E 00	2.169E 00	6.023E 02	-2.940E 03	-1.195E 03	-1.745E 03	4.922E 03	9.103E 00	1.406E-03	1.411E 01	2.178E-03
7.249E 01	8.200E-01	1.591E 00	6.691E 02	-2.981E 03	-1.211E 03	-1.769E 03	5.088E 03	5.332E 00	8.233E-04	1.035E 01	1.598E-03
7.402E 01	7.040E-01	9.500E-01	7.162E 02	-3.013E 03	-1.226E 03	-1.788E 03	5.273E 03	4.578E 00	7.069E-04	6.177E 00	9.538E-04
7.492E 01	6.358E-01	2.350E-01	7.402E 02	-3.033E 03	-1.232E 03	-1.801E 03	5.372E 03	4.134E 00	6.384E-04	1.528E 00	2.359E-04
7.493E 01	6.355E-01	2.318E-01	7.406E 02	-3.033E 03	-1.232E 03	-1.801E 03	5.372E 03	4.132E 00	6.381E-04	1.507E 00	2.327E-04
7.625E 01	5.350E-01	0.000	7.530E 02	-3.064E 03	-1.240E 03	-1.825E 03	5.424E 03	3.479E 00	5.371E-04	0.000	0.000
7.910E 01	5.000E-01	0.000	7.737E 02	-3.076E 03	-1.252E 03	-1.825E 03	5.523E 03	3.251E 00	5.020E-04	0.000	0.000
8.300E 01	2.800E-01	0.000	7.904E 02	-3.084E 03	-1.260E 03	-1.825E 03	5.627E 03	1.821E 00	2.811E-04	0.000	0.000
8.581E 01	3.450E-01	0.000	7.973E 02	-3.089E 03	-1.265E 03	-1.825E 03	5.682E 03	2.243E 00	3.464E-04	0.000	0.000
8.867E 01	4.800E-01	0.000	8.073E 02	-3.098E 03	-1.273E 03	-1.825E 03	5.705E 03	3.121E 00	4.819E-04	0.000	0.000
8.868E 01	4.803E-01	0.000	8.073E 02	-3.098E 03	-1.273E 03	-1.825E 03	5.705E 03	3.123E 00	4.822E-04	0.000	0.000

X	DDRAG	CDRAG	CP	HC
4.040E 01	9.221E 01	9.221E 01	2.394E-03	3.368E-02
4.041E 01	1.384E-01	9.235E 01	2.394E-03	3.369E-02
4.071E 01	4.216E 00	9.657E 01	2.395E-03	3.381E-02
4.121E 01	6.793E 00	1.034E 02	2.435E-03	3.426E-02
4.150E 01	4.082E 00	1.074E 02	2.481E-03	3.472E-02
4.246E 01	1.297E 01	1.204E 02	2.586E-03	3.449E-02
4.269E 01	3.599E 00	1.240E 02	3.408E-03	1.959E-02
4.270E 01	1.657E-01	1.242E 02	2.850E-03	2.229E-02
4.276E 01	9.723E-01	1.251E 02	2.750E-03	2.292E-02
4.431E 01	2.063E 01	1.458E 02	2.750E-03	4.248E-02
4.480E 01	5.919E 00	1.517E 02	2.879E-03	4.577E-02
4.549E 01	8.247E 00	1.599E 02	3.052E-03	5.062E-02
4.619E 01	8.794E 00	1.687E 02	3.385E-03	4.683E-02
4.620E 01	1.278E-01	1.689E 02	3.239E-03	4.927E-02
4.625E 01	6.393E-01	1.695E 02	3.455E-03	4.741E-02
4.626E 01	1.269E-01	1.696E 02	3.189E-03	5.192E-02
4.731E 01	1.205E 01	1.817E 02	3.132E-03	5.219E-02
4.811E 01	8.790E 00	1.905E 02	3.172E-03	4.383E-02
4.872E 01	6.536E 00	1.970E 02	3.102E-03	4.214E-02
5.017E 01	1.391E 01	2.109E 02	3.063E-03	3.284E-02
5.071E 01	4.777E 00	2.157E 02	3.102E-03	2.873E-02
5.211E 01	1.173E 01	2.274E 02	2.980E-03	2.486E-02
5.421E 01	1.525E 01	2.427E 02	2.946E-03	1.698E-02
5.471E 01	3.229E 00	2.459E 02	2.764E-03	1.848E-02
5.546E 01	4.547E 00	2.504E 02	2.839E-03	1.618E-02
5.576E 01	1.753E 00	2.522E 02	2.791E-03	1.562E-02
5.622E 01	1.271E 00	2.535E 02	2.661E-03	1.230E-02
5.765E 01	3.769E 00	2.572E 02	2.652E-03	8.706E-03
5.771E 01	2.270E-01	2.575E 02	2.405E-03	1.169E-02
5.785E 01	5.635E-01	2.580E 02	2.677E-03	1.071E-02
5.792E 01	4.168E-01	2.584E 02	3.670E-03	6.135E-03
5.821E 01	1.374E 00	2.598E 02	2.126E-03	7.050E-03
5.843E 01	7.803E-01	2.606E 02	1.928E-03	7.559E-03
5.915E 01	2.372E 00	2.630E 02	1.958E-03	8.057E-03
6.017E 01	3.417E 00	2.664E 02	2.026E-03	6.122E-03
6.218E 01	6.765E 00	2.732E 02	2.166E-03	1.674E-02
6.360E 01	5.681E 00	2.788E 02	3.036E-03	1.340E-02
6.607E 01	1.099E 01	2.898E 02	3.121E-03	1.593E-02
6.644E 01	1.571E 00	2.914E 02	3.437E-03	1.442E-02
6.649E 01	1.690E-01	2.916E 02	3.547E-03	1.440E-02
6.668E 01	8.572E-01	2.924E 02	3.543E-03	1.432E-02
6.835E 01	6.591E 00	2.990E 02	3.423E-03	9.764E-03
6.901E 01	2.236E 00	3.013E 02	3.406E-03	9.322E-03
6.978E 01	2.430E 00	3.037E 02	3.366E-03	7.972E-03
7.050E 01	2.022E 00	3.057E 02	3.327E-03	6.780E-03
7.111E 01	1.531E 00	3.072E 02	3.298E-03	5.921E-03
7.249E 01	2.945E 00	3.102E 02	3.236E-03	4.437E-03
7.402E 01	2.608E 00	3.128E 02	3.174E-03	3.335E-03
7.492E 01	1.038E 00	3.138E 02	3.077E-03	2.032E-03
7.493E 01	1.348E-03	3.138E 02	3.076E-03	2.025E-03
7.625E 01	4.621E-01	3.143E 02	3.099E-03	2.378E-03
7.910E 01	9.113E-01	3.152E 02	3.074E-03	2.244E-03
8.300E 01	7.934E-01	3.160E 02	2.967E-03	1.413E-03
8.581E 01	3.578E-01	3.164E 02	2.984E-03	1.658E-03
8.867E 01	1.777E-01	3.165E 02	3.019E-03	2.137E-03
8.868E 01	0.000	3.165E 02	3.019E-03	2.138E-03

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RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	496.	(LBF)
MEASURED THRUST	342.	(LBF)
CALCULATED SPECIFIC IMPULSE	1779.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	1223.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.3422	
MEASURED THRUST COEFFICIENT	0.2357	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3276.	(LBF)
NET THRUST	605.	(LBF)
SPECIFIC IMPULSE	2167.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.4179	

MOMENTUM AND FORCES

INLET FRICTION DRAG	92.2	(LBF)
INLET MOMENTUM CHANGE	-455.3	(LBF)
COMBUSTOR FRICTION DRAG	199.2	(LBF)
COMBUSTOR STRUT DRAG	-15.97	(LBF)
COMBUSTOR MOMENTUM CHANGE	451.	(LBF)
NOZZLE FRICTION DRAG	25.13	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	500.	(LBF)
NOZZLE PRESSURE INTEGRAL	526.	(LBF)
EXTERNAL FRICTION DRAG	41.99	(LBF)
EXTERNAL PRESSURE INTEGRAL	-641.	(LBF)
TOTAL EXTERNAL DRAG	-683.	(LBF)
TOTAL STRUT DRAG	-15.97	(LBF)
CAVITY FORCE	-559.	(LBF)
CALCULATED LOAD CELL FORCE	-746.	(LBF)
MEASURED LOAD CELL FORCE	-899.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, -132.1,

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7050	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.589	(IN)
NOZZLE SHROUD TRAILING EDGE	74.929	(IN)
NOZZLE PLUG TRAILING EDGE	88.681	(IN)
STRUT LEADING EDGE	57.845	(IN)
STRUT TRAILING EDGE	66.445	(IN)
COMBUSTOR EXIT	66.445	(IN)

INLET

ANGLE OF ATTACK	3.000	(DEGREES)
MASS FLOW RATIO	0.9039	
ADDITIVE DRAG COEFFICIENT	0.0087	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0880	
DELTA PT2	0.0830	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.2339	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.0896	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8874	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9080	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.8973	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8548	
ENTHALPY AT PO - SUPERSONIC	-27.31	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	4.75	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0203
EQUIVALENCE RATIO	0.613
COMBUSTOR EFFICIENCY	0.961
TOTAL PRESSURE RATIO	0.1010
COMBUSTOR EFFECTIVENESS	0.8349

INJECTOR DISCHARGE COEFFICIENTS 0.5815, 0.8123, 0.6864,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9501
NOZZLE COEFFICIENT - CT	0.8760
PROCESS EFFICIENCY	0.8531
KINETIC ENERGY EFFICIENCY	0.8890

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.690	O
1C	44.300	
2A	50.165	
2C	46.250	C
3A	55.455	
3B	57.640	
4	46.190	C

Reading 91

t = 224.25 sec.

READING = 0091 BLOCK = 128 TIME = 224.851 MACH 7.3 PT = 995.749 TT = 3078.5

~~4/13/73~~

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H		GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	G	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6															
0.000	995.749	3079	693.4(	818)	1.2904	28.956	2612											
0.000	0.154	297	-57.6(	71)	1.3965	28.955	849	7.259	6130	1.815	0.05940	13.751	0.9039	2456	5.689	193.1		
SPIKE TIP NS		2	0 7															
0.600	11.175	3078	693.4(	818)	1.2900	28.955	2611											
0.600	10.288	3021	676.1(	801)	1.2919	28.956	2589	0.360	931	2.124	0.05940	13.751	0.9039	2780	0.859	202.1		
WIND TUNNEL		3	0 0															
0.000	995.749	3079	693.4(	818)	1.2904	28.956	2612											
0.000	0.166	304	-56.0(	73)	1.3967	28.955	854	7.171	6124	1.815	0.06273	14.523	0.9039	2803	5.970	193.0		
SPIKE TIP NS		4	0 0															
0.600	11.175	3078	693.4(	818)	1.2900	28.955	2611											
0.600	10.172	3014	673.8(	799)	1.2921	28.955	2586	0.384	992	2.124	0.06273	14.523	0.9039	2803	0.967	193.0		
INLET THROAT		5	0 3															
40.400	239.259	2904	640.7(	766)	1.2958	28.955	2542											
40.400	10.335	1342	200.5(	329)	1.3572	28.955	1768	2.654	4693	1.896	0.67735	13.751	0.0793	2216	49.404	161.1		
INLET UPNRBK		6	0 3															
40.400	239.259	2904	640.7(	766)	1.2958	28.955	2542											
40.400	6.895	1290	187.0(	316)	1.3604	28.955	1736	2.745	4765	1.896	0.61577	13.751	0.0872	2235	45.598	162.5		
INLET DNNRBK		7	0 4															
40.400	89.320	2904	640.7(	767)	1.2958	28.955	2542											
40.400	77.209	2809	612.2(	739)	1.2989	28.955	2503	0.478	1196	1.963	0.61577	13.751	0.0872	2235	11.441	162.5		
COMBUSTOR	0	8	1 2															
40.410	239.275	2904	640.6(	766)	1.2958	28.955	2542											
40.410	10.332	1342	200.5(	329)	1.3572	28.955	1768	2.654	4693	1.896	0.67726	13.751	0.0793	2216	49.396	161.1		
COMBUSTOR	0	9	2 3															
40.715	239.287	2895	638.0(	764)	1.2961	28.955	2538											
40.715	10.368	1338	199.8(	328)	1.3574	28.955	1766	2.653	4684	1.895	0.67971	13.751	0.0790	2212	49.481	160.8		
COMBUSTOR	0	10	3 4															
41.205	221.604	2881	633.7(	760)	1.2966	28.955	2533											
41.205	10.665	1368	207.3(	336)	1.3556	28.955	1784	2.589	4619	1.898	0.67494	13.751	0.0795	2192	48.452	159.4		
COMBUSTOR	0	11	4 4															
41.500	202.524	2872	631.0(	757)	1.2968	28.955	2529											
41.500	11.037	1408	217.8(	347)	1.3532	28.955	1809	2.514	4547	1.904	0.66792	13.751	0.0804	2171	47.198	157.9		
COMBUSTOR	0	12	5 5															
42.460	161.649	2842	622.1(	748)	1.2978	28.955	2517											
42.460	11.456	1490	239.4(	368)	1.3486	28.955	1857	2.356	4376	1.916	0.65057	13.751	0.0851	2120	42.683	154.2		
COMBUSTOR	0	13	6 21															
42.690	92.159	2785	637.1(	814)	1.3026	25.918	2638											
42.690	6.865	1467	235.2(	404)	1.3529	25.918	1951	2.327	4540	2.135	0.62902	13.878	0.0861	2110	44.382	152.0	0.28	0.07
COMBUSTOR	0	14	7 21															
42.700	104.669	2691	637.0(	785)	1.3069	25.822	2602											
42.700	6.913	1365	225.6(	375)	1.3595	25.822	1890	2.400	4537	2.115	0.62893	13.878	0.0862	2109	44.340	152.0	0.28	0.01
COMBUSTOR	0	15	8 21															
42.765	107.199	2676	636.5(	780)	1.3076	25.808	2596											
42.765	7.221	1363	229.6(	375)	1.3597	25.808	1890	2.388	4512	2.112	0.62661	13.878	0.0865	2106	43.958	151.8	0.28	0.00
COMBUSTOR	0	16	9 5															
44.310	73.995	3216	624.1(	947)	1.2817	26.416	2785											
44.310	24.854	2510	390.1(	718)	1.3058	26.418	2483	1.378	3422	2.183	0.57934	13.878	0.0935	2071	30.808	149.3	0.28	0.40
COMBUSTOR	0	17	10 4															
44.800	69.255	3384	620.6(	999)	1.2730	26.615	2837											
44.800	30.446	2823	430.6(	816)	1.2927	26.619	2611	1.181	3084	2.198	0.57286	13.878	0.0946	2068	27.453	149.0	0.28	0.52
COMBUSTOR	0	18	11 4															
45.485	67.845	3468	615.9(	1025)	1.2684	26.726	2860											
45.485	36.203	3027	464.4(	880)	1.2843	26.730	2689	1.024	2753	2.204	0.56957	13.878	0.0951	2070	24.368	149.1	0.28	0.59

ORIGINAL PAGE IS OF POOR QUALITY

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 6														
46.190	66.632	3103	628.4(1011)	1.2889	23.658	2899											
46.190	36.586	2707	482.3(868)	1.3024	23.659	2722	0.993	2704	2.377	0.55955	14.020	0.0978	2095	23.512	149.4	0.59	0.23
COMBUSTOR	0	20	13 2														
46.200	66.673	3102	628.3(1010)	1.2890	23.657	2899											
46.200	36.591	2705	482.2(867)	1.3025	23.658	2721	0.994	2704	2.377	0.56002	14.020	0.0977	2094	23.535	149.4	0.59	0.23
COMBUSTOR	0	21	14 5														
46.250	66.061	2857	634.5(978)	1.3016	22.140	2890											
46.250	36.618	2486	493.2(839)	1.3141	22.140	2709	0.982	2659	2.465	0.56104	14.102	0.0981	2086	23.184	147.9	0.78	0.14
COMBUSTOR	0	22	15 2														
46.260	66.029	2858	634.4(979)	1.3015	22.141	2890											
46.260	36.624	2488	493.2(839)	1.3140	22.142	2709	0.981	2658	2.465	0.56064	14.102	0.0982	2086	23.160	147.9	0.78	0.14
COMBUSTOR	0	23	16 4														
47.310	62.998	3011	620.0(1034)	1.2938	22.311	2947											
47.310	37.193	2667	486.9(903)	1.3055	22.311	2785	0.927	2581	2.482	0.51971	14.102	0.1059	2140	20.845	151.8	0.78	0.19
COMBUSTOR	0	24	17 4														
48.110	59.756	3194	607.3(1100)	1.2846	22.507	3010											
48.110	36.326	2855	474.5(970)	1.2963	22.508	2859	0.902	2578	2.501	0.47767	14.102	0.1153	2202	19.135	156.2	0.78	0.26
COMBUSTOR	0	25	18 4														
48.725	56.398	3495	597.4(1210)	1.2687	22.817	3109											
48.725	30.925	3069	425.8(1045)	1.2844	22.821	2931	1.000	2930	2.527	0.43597	14.102	0.1263	2285	19.852	162.0	0.78	0.36
COMBUSTOR	0	26	19 4														
50.175	53.489	3747	578.8(1303)	1.2537	23.111	3179											
50.175	17.426	2954	256.7(996)	1.2843	23.125	2856	1.406	4014	2.544	0.35430	14.102	0.1554	2453	22.101	173.9	0.78	0.45
COMBUSTOR	0	27	20 4														
50.705	58.243	3514	574.1(1216)	1.2670	22.890	3110											
50.705	12.492	2495	175.4(828)	1.3035	22.897	2658	1.681	4467	2.522	0.33136	14.102	0.1662	2490	23.002	176.5	0.78	0.38
COMBUSTOR	0	28	21 5														
52.115	49.348	3846	563.8(1339)	1.2468	23.249	3202											
52.115	11.850	2848	157.8(953)	1.2861	23.270	2798	1.611	4508	2.555	0.28241	14.102	0.1950	2568	19.783	182.1	0.78	0.49
COMBUSTOR	0	29	22 5														
54.215	58.617	3475	547.9(1205)	1.2683	22.821	3099											
54.215	6.425	2103	19.2(687)	1.3176	22.828	2457	2.094	5143	2.524	0.23214	14.143	0.2379	2652	18.555	187.5	0.78	0.38
COMBUSTOR	0	30	23 4														
54.715	50.928	3661	545.1(1274)	1.2575	23.011	3154											
54.715	6.983	2363	34.1(778)	1.3054	23.024	2581	1.959	5057	2.548	0.22265	14.143	0.2480	2666	17.496	188.5	0.78	0.44
COMBUSTOR	0	31	24 3														
55.465	51.192	3638	540.9(1266)	1.2587	22.999	3146											
55.465	6.234	2281	9.3(749)	1.3086	23.011	2540	2.031	5157	2.546	0.20989	14.143	0.2631	2687	16.822	190.0	0.78	0.44
COMBUSTOR	0	32	25 3														
55.760	51.595	3622	539.2(1259)	1.2596	22.987	3141											
55.760	5.939	2239	-0.9(734)	1.3103	22.998	2518	2.064	5199	2.544	0.20529	14.143	0.2690	2695	16.585	190.5	0.78	0.44
COMBUSTOR	0	33	26 4														
56.225	46.457	3663	536.9(1275)	1.2568	23.034	3152											
56.225	4.350	2162	-48.4(705)	1.3126	23.046	2474	2.187	5412	2.555	0.16237	14.143	0.3401	2758	13.656	195.0	0.78	0.45
COMBUSTOR	0	34	27 4														
57.650	48.161	3624	530.5(1260)	1.2590	23.010	3140											
57.650	3.694	2034	-84.4(659)	1.3179	23.021	2406	2.305	5547	2.509	0.15007	14.143	0.3679	2787	12.937	197.0	0.78	0.44
COMBUSTOR	0	35	28 5														
57.705	37.784	3936	530.2(1376)	1.2383	23.329	3223											
57.705	4.712	2535	-37.1(836)	1.2949	23.362	2643	2.016	5328	2.587	0.14971	14.143	0.3689	2787	12.395	197.1	0.78	0.54
COMBUSTOR	0	36	29 3														
57.845	37.865	3924	529.6(1372)	1.2391	23.319	3220											
57.845	4.625	2513	-40.9(828)	1.2958	23.351	2633	2.029	5383	2.586	0.14858	14.143	0.3717	2789	12.337	197.2	0.78	0.54
COMBUSTOR	0	37	30 21														
57.925	20.086	4904	529.3(1743)	1.1495	24.405	3389											
57.925	3.350	3866	-104.1(1317)	1.2014	24.945	3042	1.850	5630	2.670	0.15027	14.143	0.3675	2790	13.147	197.3	0.78	1.00

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	*	A/AC	PUMPH	C	IVAC	PHI	ETAC
COMBUSTOR	0	38	31 21														
58.205	19.110	4897	528.1(1740)	1.1491	24.400	3386											
58.205	3.000	3825	-123.2(1301)	1.2038	24.953	3029	1.865	5709	2.673	0.14974	14.143	0.3688	2793	13.285	197.5	0.78	1.00
COMBUSTOR	0	39	32 21														
58.431	18.814	4894	527.2(1739)	1.1489	24.399	3385											
58.431	2.893	3811	-130.1(1295)	1.2047	24.955	3024	1.896	5735	2.675	0.14952	14.143	0.3693	2795	13.326	197.6	0.78	1.00
COMBUSTOR	0	40	33 21														
59.155	17.612	4884	524.6(1735)	1.1484	24.395	3381											
59.155	2.550	3768	-149.8(1279)	1.2071	24.962	3010	1.930	5809	2.679	0.14714	14.143	0.3753	2799	13.284	197.9	0.78	1.00
COMBUSTOR	0	41	34 21														
60.175	22.237	4906	520.7(1743)	1.1509	24.430	3390											
60.175	4.200	3932	-72.9(1343)	1.1983	24.934	3065	1.778	5450	2.660	0.14621	14.143	0.3777	2802	12.384	198.1	0.78	1.00
COMBUSTOR	0	42	35 21														
62.185	24.251	4907	512.6(1743)	1.1523	24.453	3390											
62.185	5.262	4008	-36.1(1374)	1.1945	24.919	3091	1.695	5240	2.651	0.15129	14.143	0.3650	2795	12.320	197.6	0.78	1.00
COMBUSTOR	0	43	36 21														
63.605	25.914	4908	507.1(1743)	1.1532	24.468	3391											
63.605	6.681	4109	14.8(1414)	1.1889	24.893	3124	1.589	4963	2.644	0.15540	14.143	0.3553	2790	11.986	197.3	0.78	1.00
COMBUSTOR	0	44	37 21														
66.069	25.111	4893	497.5(1737)	1.1535	24.477	3386											
66.069	8.614	4269	102.4(1479)	1.1789	24.835	3174	1.401	4446	2.645	0.14730	14.143	0.3749	2782	10.178	196.7	0.78	1.00
COMBUSTOR	0	45	38 200														
66.445	23.366	4884	496.0(1733)	1.1528	24.471	3382											
66.445	8.480	4298	120.7(1491)	1.1763	24.817	3188	1.362	4333	2.651	0.13694	14.143	0.4032	2781	9.222	196.6	0.78	1.00
COMBUSTOR REGEN	46	39	3														
66.445	23.366	5069	671.2(1813)	1.1445	24.216	3451											
66.445	9.133	4561	303.1(1600)	1.1569	24.621	3264	1.315	4292	2.686	0.13694	14.143	0.4032	2830	9.133	200.1	0.78	1.00
NOZZLE AE	47	40	5														
88.681	23.366	4884	496.0(1636)	1.1528	24.471	3382											
88.681	0.640	2690	-596.3(866)	1.2694	25.037	2604	2.839	7393	2.651	0.02851	14.143	1.9371	3568	3.275	252.2	0.78	1.00
NOZZLE PO	48	41	5														
88.681	23.366	4884	496.0(1636)	1.1528	24.471	3382											
88.681	0.154	1962	-657.9(605)	1.2983	25.038	2249	3.660	8231	2.651	0.01045	14.143	5.2821	3826	1.337	270.5	0.78	1.00
NOZZLE AE REGEN	49	42	5														
88.681	23.366	5069	671.2(1813)	1.1445	24.216	3451											
88.681	0.697	3001	-477.1(982)	1.2556	25.032	2736	2.771	7580	2.686	0.02851	14.143	1.9371	3678	3.358	260.0	0.78	1.00
NOZZLE PO REGEN	50	43	5														
88.681	23.366	5069	671.2(1813)	1.1445	24.216	3451											
88.681	0.154	2170	-785.3(678)	1.2894	25.038	2357	3.622	8537	2.686	0.00980	14.143	5.6321	3975	1.301	281.0	0.78	1.00
FICTIVE COMBUSTR	68	61	0														
66.445	239.259	5101	496.0(1817)	1.1773	24.718	3475											
66.445	0.154	1101	-1139.5(324)	1.3477	25.038	1716	5.271	9046	2.463	0.02049	14.143	2.6954	4083	2.880	288.7	0.78	1.00
FICTIVE NOZZLE	69	62	0														
88.681	14.411	4790	459.7(1695)	1.1502	24.462	3346											
88.681	0.794	3055	-456.1(1002)	1.2531	25.031	2757	2.455	6769	2.682	0.02851	14.143	1.9371	3370	2.999	238.3	0.78	1.00

READING = 0091 BLOCK = 128 TIME = 224.251 MACH 7.3 PT = 995.749 TT = 3078.5

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/PBO	P-IB/PTO	P-OB/PBO	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.499E-01	0.000	0.000	0.000	2.470E-02	4.486E 00	6.929E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.486E 00	6.929E-04	0.000	0.000
3.070E 01	1.520E 00	0.000	-1.125E 02	0.000	0.000	0.000	5.053E 02	9.881E 00	1.526E-03	0.000	0.000
3.508E 01	1.951E 00	0.000	-2.250E 02	0.000	0.000	0.000	6.804E 02	1.268E 01	1.960E-03	0.000	0.000
3.555E 01	2.220E 00	0.000	-2.440E 02	0.000	0.000	0.000	7.013E 02	1.443E 01	2.229E-03	0.000	0.000
3.606E 01	2.495E 00	0.000	-2.680E 02	-4.005E 02	-4.005E 02	0.000	7.246E 02	1.622E 01	2.506E-03	0.000	0.000
3.648E 01	2.240E 00	0.000	-2.882E 02	-4.102E 02	-4.102E 02	0.000	7.443E 02	1.456E 01	2.250E-03	0.000	0.000
3.658E 01	2.319E 00	3.191E 00	-3.262E 02	-4.126E 02	-4.126E 02	0.000	7.491E 02	1.507E 01	2.329E-03	2.074E 01	3.204E-03
3.659E 01	2.323E 00	3.218E 00	-3.262E 02	-4.128E 02	-4.128E 02	0.000	7.494E 02	1.510E 01	2.333E-03	2.092E 01	3.232E-03
3.701E 01	2.645E 00	5.143E 00	-3.277E 02	-4.230E 02	-4.230E 02	0.000	7.931E 02	1.719E 01	2.656E-03	3.343E 01	5.165E-03
3.725E 01	2.472E 00	6.262E 00	-3.258E 02	-4.291E 02	-4.291E 02	0.000	8.188E 02	1.607E 01	2.483E-03	4.071E 01	6.289E-03
3.803E 01	1.925E 00	8.867E 00	-3.030E 02	-4.497E 02	-4.497E 02	0.000	9.020E 02	1.251E 01	1.933E-03	5.764E 01	8.905E-03
3.871E 01	7.500E 00	1.117E 01	-3.051E 02	-5.425E 02	-4.706E 02	-7.181E 01	9.785E 02	4.875E 01	7.532E-03	7.261E 01	1.122E-02
3.875E 01	7.784E 00	1.105E 01	-3.061E 02	-5.460E 02	-4.718E 02	-7.414E 01	9.825E 02	5.060E 01	7.817E-03	7.185E 01	1.110E-02
3.901E 01	9.900E 00	1.019E 01	-3.154E 02	-5.723E 02	-4.810E 02	-9.138E 01	1.012E 03	6.436E 01	9.942E-03	6.626E 01	1.024E-02
3.950E 01	1.405E 01	8.571E 00	-3.438E 02	-6.239E 02	-5.001E 02	-1.238E 02	1.068E 03	9.137E 01	1.411E-02	5.572E 01	8.608E-03
3.974E 01	1.211E 01	7.794E 00	-3.566E 02	-6.494E 02	-5.102E 02	-1.392E 02	1.095E 03	7.871E 01	1.216E-02	5.067E 01	7.827E-03
4.000E 01	9.912E 00	9.869E 00	-3.630E 02	-6.791E 02	-5.220E 02	-1.567E 02	1.126E 03	6.444E 01	9.955E-03	6.416E 01	9.912E-03
4.021E 01	1.050E 01	1.147E 01	-3.643E 02	-7.025E 02	-5.324E 02	-1.701E 02	1.150E 03	6.823E 01	1.054E-02	7.460E 01	1.152E-02
4.040E 01	1.105E 01	1.181E 01	-3.644E 02	-7.251E 02	-5.422E 02	-1.828E 02	1.172E 03	7.183E 01	1.110E-02	7.676E 01	1.186E-02
4.041E 01	1.108E 01	1.182E 01	-3.643E 02	-7.262E 02	-5.427E 02	-1.835E 02	1.174E 03	7.201E 01	1.112E-02	7.687E 01	1.187E-02
4.071E 01	1.194E 01	1.234E 01	-3.641E 02	-7.622E 02	-5.588E 02	-2.034E 02	1.209E 03	7.765E 01	1.200E-02	8.025E 01	1.240E-02
4.121E 01	1.334E 01	2.487E 00	-3.775E 02	-8.215E 02	-5.866E 02	-2.349E 02	1.267E 03	8.670E 01	1.339E-02	1.617E 01	2.498E-03
4.150E 01	1.417E 01	2.484E 00	-3.944E 02	-8.581E 02	-6.047E 02	-2.534E 02	1.302E 03	9.215E 01	1.424E-02	1.615E 01	2.495E-03
4.246E 01	9.075E 00	2.472E 00	-4.320E 02	-9.807E 02	-6.657E 02	-3.149E 02	1.416E 03	5.900E 01	9.114E-03	1.607E 01	2.483E-03
4.269E 01	1.126E 01	2.470E 00	-4.388E 02	-1.010E 03	-6.801E 02	-3.296E 02	1.443E 03	7.321E 01	1.131E-02	1.605E 01	2.480E-03
4.270E 01	1.136E 01	2.470E 00	-4.391E 02	-1.011E 03	-6.807E 02	-3.302E 02	1.444E 03	7.382E 01	1.140E-02	1.605E 01	2.480E-03
4.276E 01	1.197E 01	2.469E 00	-4.414E 02	-1.019E 03	-6.847E 02	-3.342E 02	1.452E 03	7.784E 01	1.202E-02	1.605E 01	2.479E-03
4.431E 01	2.666E 01	2.305E 01	-4.566E 02	-1.191E 03	-7.619E 02	-4.288E 02	1.638E 03	1.733E 02	2.677E-02	1.499E 02	2.315E-02
4.480E 01	3.131E 01	2.958E 01	-4.549E 02	-1.239E 03	-7.801E 02	-4.591E 02	1.698E 03	2.036E 02	3.145E-02	1.923E 02	2.971E-02
4.549E 01	3.370E 01	3.871E 01	-4.457E 02	-1.305E 03	-8.035E 02	-5.017E 02	1.782E 03	2.191E 02	3.384E-02	2.516E 02	3.887E-02
4.619E 01	3.616E 01	3.701E 01	-4.131E 02	-1.394E 03	-8.278E 02	-5.667E 02	1.868E 03	2.351E 02	3.631E-02	2.406E 02	3.717E-02
4.620E 01	3.619E 01	3.699E 01	-4.134E 02	-1.396E 03	-8.281E 02	-5.679E 02	1.869E 03	2.353E 02	3.635E-02	2.405E 02	3.715E-02
4.625E 01	3.637E 01	3.687E 01	-4.097E 02	-1.404E 03	-8.298E 02	-5.742E 02	1.875E 03	2.364E 02	3.652E-02	2.397E 02	3.703E-02
4.626E 01	3.640E 01	3.684E 01	-4.092E 02	-1.406E 03	-8.302E 02	-5.755E 02	1.877E 03	2.366E 02	3.656E-02	2.395E 02	3.700E-02
4.731E 01	4.006E 01	3.432E 01	-3.454E 02	-1.609E 03	-8.668E 02	-7.422E 02	2.006E 03	2.604E 02	4.023E-02	2.231E 02	3.447E-02
4.811E 01	4.025E 01	3.240E 01	-2.771E 02	-1.789E 03	-8.951E 02	-8.937E 02	2.105E 03	2.617E 02	4.042E-02	2.106E 02	3.254E-02
4.872E 01	3.092E 01	3.092E 01	-1.899E 02	-1.928E 03	-9.170E 02	-1.011E 03	2.182E 03	2.010E 02	3.106E-02	2.010E 02	3.106E-02
5.017E 01	1.743E 01	1.743E 01	-9.169E 00	-2.191E 03	-9.695E 02	-1.222E 03	2.363E 03	1.133E 02	1.750E-02	1.133E 02	1.750E-02
5.071E 01	1.249E 01	1.249E 01	3.216E 01	-2.256E 03	-9.889E 02	-1.267E 03	2.429E 03	8.121E 01	1.254E-02	8.121E 01	1.254E-02
5.211E 01	1.185E 01	1.185E 01	1.221E 02	-2.401E 03	-1.041E 03	-1.360E 03	2.607E 03	7.704E 01	1.190E-02	7.704E 01	1.190E-02
5.421E 01	6.425E 00	6.425E 00	2.227E 02	-2.592E 03	-1.121E 03	-1.471E 03	2.873E 03	4.177E 01	6.452E-03	4.177E 01	6.452E-03
5.471E 01	6.983E 00	6.983E 00	2.402E 02	-2.632E 03	-1.140E 03	-1.492E 03	2.937E 03	4.540E 01	7.013E-03	4.540E 01	7.013E-03
5.546E 01	6.234E 00	6.234E 00	2.657E 02	-2.691E 03	-1.170E 03	-1.522E 03	3.033E 03	4.053E 01	6.261E-03	4.053E 01	6.261E-03
5.576E 01	5.939E 00	5.939E 00	2.749E 02	-2.714E 03	-1.181E 03	-1.533E 03	3.070E 03	3.861E 01	5.965E-03	3.861E 01	5.965E-03
5.622E 01	3.225E 00	5.475E 00	3.397E 02	-2.748E 03	-1.196E 03	-1.551E 03	3.102E 03	2.097E 01	3.239E-03	3.559E 01	5.498E-03
5.765E 01	3.694E 00	3.694E 00	3.723E 02	-2.838E 03	-1.234E 03	-1.605E 03	3.210E 03	2.401E 01	3.710E-03	2.401E 01	3.710E-03
5.771E 01	5.800E 00	3.625E 00	3.733E 02	-2.842E 03	-1.235E 03	-1.607E 03	3.217E 03	3.771E 01	5.825E-03	2.357E 01	3.640E-03
5.785E 01	5.800E 00	3.450E 00	3.756E 02	-2.851E 03	-1.239E 03	-1.612E 03	3.234E 03	3.771E 01	5.825E-03	2.243E 01	3.465E-03
5.792E 01	3.350E 00	3.350E 00	3.770E 02	-2.855E 03	-1.241E 03	-1.615E 03	3.245E 03	2.178E 01	3.364E-03	2.178E 01	3.364E-03
5.821E 01	3.000E 00	3.000E 00	3.811E 02	-2.872E 03	-1.248E 03	-1.624E 03	3.280E 03	1.950E 01	3.013E-03	1.950E 01	3.013E-03
5.843E 01	2.893E 00	2.893E 00	3.840E 02	-2.884E 03	-1.254E 03	-1.630E 03	3.309E 03	1.881E 01	2.905E-03	1.881E 01	2.905E-03
5.915E 01	2.550E 00	2.550E 00	3.914E 02	-2.922E 03	-1.273E 03	-1.649E 03	3.402E 03	1.658E 01	2.561E-03	1.658E 01	2.561E-03
6.017E 01	4.200E 00	4.200E 00	3.992E 02	-2.976E 03	-1.299E 03	-1.677E 03	3.532E 03	2.730E 01	4.218E-03	2.730E 01	4.218E-03
6.218E 01	5.262E 00	5.262E 00	4.003E 02	-3.041E 03	-1.350E 03	-1.741E 03	3.790E 03	3.421E 01	5.285E-03	3.421E 01	5.285E-03
6.360E 01	6.681E 00	6.681E 00	4.003E 02	-3.169E 03	-1.383E 03	-1.786E 03	3.972E 03	4.343E 01	6.710E-03	4.343E 01	6.710E-03

READING = 0001 BLOCK = 128 TIME = 224.251 MACH 7.3 PT = 995.749 TT = 3078.5

XABS	P-IA	P-OB	PDA	QOX	Q-IA	Q-OA	CAWALL	P-IA/P80	P-IA/PTO	P-OB/P80	P-OB/PTO
6.607E 01	8.614E 00	8.614E 00	4.003E 02	-3.305E 03	-1.428E 03	-1.877E 03	4.289E 03	5.600E 01	8.651E-03	5.600E 01	8.651E-03
6.644E 01	8.050E 00	8.909E 00	4.003E 02	-3.326E 03	-1.434E 03	-1.893E 03	4.337E 03	5.233E 01	8.084E-03	5.792E 01	8.947E-03
6.649E 01	8.050E 00	8.941E 00	4.003E 02	-3.328E 03	-1.434E 03	-1.894E 03	4.342E 03	5.233E 01	8.084E-03	5.812E 01	8.979E-03
6.668E 01	7.719E 00	9.097E 00	4.003E 02	-3.339E 03	-1.437E 03	-1.902E 03	4.368E 03	5.018E 01	7.752E-03	5.914E 01	9.136E-03
6.835E 01	4.970E 00	4.710E 00	4.747E 02	-3.429E 03	-1.468E 03	-1.941E 03	4.584E 03	3.231E 01	4.991E-03	3.062E 01	4.730E-03
6.901E 01	3.877E 00	4.927E 00	5.682E 02	-3.467E 03	-1.483E 03	-1.984E 03	4.665E 03	2.520E 01	3.893E-03	3.203E 01	4.949E-03
6.978E 01	2.620E 00	3.720E 00	6.715E 02	-3.515E 03	-1.502E 03	-2.013E 03	4.760E 03	1.703E 01	2.631E-03	2.418E 01	3.735E-03
7.050E 01	1.984E 00	2.590E 00	7.413E 02	-3.562E 03	-1.519E 03	-2.044E 03	4.848E 03	1.290E 01	1.992E-03	1.684E 01	2.601E-03
7.111E 01	1.445E 00	2.310E 00	7.859E 02	-3.599E 03	-1.531E 03	-2.068E 03	4.922E 03	9.394E 00	1.451E-03	1.502E 01	2.320E-03
7.249E 01	8.850E-01	1.677E 00	8.565E 02	-3.659E 03	-1.556E 03	-2.104E 03	5.088E 03	5.753E 00	8.888E-04	1.090E 01	1.684E-03
7.402E 01	7.446E-01	9.750E-01	9.062E 02	-3.705E 03	-1.577E 03	-2.128E 03	5.273E 03	4.841E 00	7.478E-04	6.338E 00	9.792E-04
7.492E 01	6.620E-01	2.300E-01	9.309E 02	-3.731E 03	-1.587E 03	-2.144E 03	5.372E 03	4.304E 00	6.649E-04	1.495E 00	2.310E-04
7.493E 01	6.617E-01	2.267E-01	9.313E 02	-3.731E 03	-1.587E 03	-2.144E 03	5.372E 03	4.301E 00	6.645E-04	1.474E 00	2.277E-04
7.625E 01	5.400E-01	0.000	9.440E 02	-3.772E 03	-1.600E 03	-2.173E 03	5.424E 03	3.510E 00	5.423E-04	0.000	0.000
7.910E 01	5.700E-01	0.000	9.662E 02	-3.792E 03	-1.619E 03	-2.173E 03	5.523E 03	3.706E 00	5.724E-04	0.000	0.000
8.300E 01	5.350E-01	0.000	9.898E 02	-3.808E 03	-1.635E 03	-2.173E 03	5.627E 03	3.478E 00	5.373E-04	0.000	0.000
8.581E 01	5.650E-01	0.000	1.002E 03	-3.819E 03	-1.647E 03	-2.173E 03	5.682E 03	3.673E 00	5.674E-04	0.000	0.000
8.867E 01	6.250E-01	0.000	1.016E 03	-3.840E 03	-1.667E 03	-2.173E 03	5.705E 03	4.063E 00	6.277E-04	0.000	0.000
8.868E 01	6.251E-01	0.000	1.016E 03	-3.840E 03	-1.667E 03	-2.173E 03	5.705E 03	4.064E 00	6.278E-04	0.000	0.000

X	DDRAG	CDRAG	CP	HC
4.040E 01	9.203E 01	9.203E 01	2.368E-03	3.329E-02
4.041E 01	1.373E-01	9.217E 01	2.368E-03	3.328E-02
4.071E 01	4.181E 00	9.635E 01	2.369E-03	3.340E-02
4.121E 01	6.735E 00	1.031E 02	2.407E-03	3.383E-02
4.150E 01	4.048E 00	1.071E 02	2.453E-03	3.428E-02
4.246E 01	1.287E 01	1.200E 02	2.554E-03	3.399E-02
4.269E 01	3.560E 00	1.236E 02	3.364E-03	2.137E-02
4.270E 01	1.629E-01	1.237E 02	2.819E-03	2.454E-02
4.276E 01	9.513E-01	1.247E 02	2.715E-03	2.589E-02
4.431E 01	1.955E 01	1.442E 02	2.904E-03	5.461E-02
4.480E 01	5.383E 00	1.496E 02	3.299E-03	5.214E-02
4.549E 01	7.288E 00	1.569E 02	3.433E-03	5.282E-02
4.619E 01	7.388E 00	1.643E 02	3.715E-03	4.975E-02
4.620E 01	1.033E-01	1.644E 02	3.393E-03	5.646E-02
4.625E 01	4.970E-01	1.649E 02	3.570E-03	5.395E-02
4.626E 01	9.901E-02	1.650E 02	3.338E-03	5.901E-02
4.731E 01	9.447E 00	1.744E 02	3.293E-03	5.777E-02
4.811E 01	6.569E 00	1.810E 02	3.338E-03	5.427E-02
4.872E 01	4.961E 00	1.860E 02	3.314E-03	5.072E-02
5.017E 01	1.234E 01	1.983E 02	3.181E-03	3.882E-02
5.071E 01	4.820E 00	2.031E 02	3.250E-03	3.073E-02
5.211E 01	-1.196E 01	2.151E 02	3.046E-03	3.012E-02
5.421E 01	1.571E 01	2.308E 02	3.109E-03	1.882E-02
5.471E 01	3.435E 00	2.342E 02	2.871E-03	2.096E-02
5.546E 01	4.792E 00	2.390E 02	2.958E-03	1.865E-02
5.576E 01	1.858E 00	2.409E 02	2.935E-03	1.804E-02
5.622E 01	1.364E 00	2.422E 02	2.817E-03	1.393E-02
5.765E 01	4.013E 00	2.462E 02	2.789E-03	1.224E-02
5.771E 01	2.497E-01	2.465E 02	2.807E-03	1.447E-02
5.785E 01	6.392E-01	2.471E 02	3.010E-03	1.354E-02
5.792E 01	4.399E-01	2.476E 02	3.737E-03	9.304E-03
5.821E 01	1.766E 00	2.493E 02	3.756E-03	6.574E-03
5.843E 01	1.441E 00	2.508E 02	3.758E-03	8.339E-03
5.915E 01	4.645E 00	2.554E 02	3.779E-03	7.564E-03
6.017E 01	6.223E 00	2.617E 02	3.639E-03	1.081E-02
6.218E 01	1.152E 01	2.732E 02	3.593E-03	1.263E-02
6.360E 01	7.925E 00	2.811E 02	3.565E-03	1.472E-02
6.607E 01	1.255E 01	2.936E 02	3.599E-03	1.658E-02
6.644E 01	1.694E 00	2.953E 02	3.643E-03	1.600E-02
6.649E 01	1.739E-01	2.955E 02	3.695E-03	1.625E-02
6.668E 01	8.766E-01	2.964E 02	3.692E-03	1.617E-02
6.835E 01	7.039E 00	3.034E 02	3.610E-03	1.195E-02
6.901E 01	2.499E 00	3.059E 02	3.592E-03	1.125E-02
6.978E 01	2.677E 00	3.086E 02	3.545E-03	9.075E-03
7.050E 01	2.157E 00	3.108E 02	3.498E-03	7.241E-03
7.111E 01	1.596E 00	3.124E 02	3.470E-03	6.291E-03
7.249E 01	3.078E 00	3.154E 02	3.414E-03	4.750E-03
7.402E 01	2.724E 00	3.182E 02	3.353E-03	3.514E-03
7.492E 01	1.075E 00	3.192E 02	3.263E-03	2.117E-03
7.493E 01	1.390E-03	3.192E 02	3.263E-03	2.111E-03
7.625E 01	4.740E-01	3.197E 02	3.280E-03	2.450E-03
7.910E 01	9.672E-01	3.207E 02	3.270E-03	2.540E-03
8.300E 01	1.025E 00	3.217E 02	3.240E-03	2.401E-03
8.581E 01	5.282E-01	3.222E 02	3.232E-03	2.492E-03
8.867E 01	2.297E-01	3.225E 02	3.230E-03	2.681E-03
8.868E 01	0.000	3.225E 02	3.230E-03	2.682E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	698.	(LBF)
MEASURED THRUST	653.	(LBF)
CALCULATED SPECIFIC IMPULSE	1946.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	1822.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.4812	
MEASURED THRUST COEFFICIENT	0.4505	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	3474.	(LBF)
NET THRUST	802.	(LBF)
SPECIFIC IMPULSE	2237.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.5532	

MOMENTUM AND FORCES

INLET FRICTION DRAG	92.0	(LBF)
INLET MOMENTUM CHANGE	-456.4	(LBF)
COMBUSTOR FRICTION DRAG	203.3	(LBF)
COMBUSTOR STRUT DRAG	-15.32	(LBF)
COMBUSTOR MOMENTUM CHANGE	565.	(LBF)
NOZZLE FRICTION DRAG	27.12	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	589.	(LBF)
NOZZLE PRESSURE INTEGRAL	616.	(LBF)
EXTERNAL FRICTION DRAG	41.61	(LBF)
EXTERNAL PRESSURE INTEGRAL	-640.	(LBF)
TOTAL EXTERNAL DRAG	-682.	(LBF)
TOTAL STRUT DRAG	-15.32	(LBF)
CAVITY FORCE	-662.	(LBF)
CALCULATED LOAD CELL FORCE	-646.	(LBF)
MEASURED LOAD CELL FORCE	-690.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, -142.2,

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7050	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.589	(IN)
NOZZLE SHROUD TRAILING EDGE	74.929	(IN)
NOZZLE PLUG TRAILING EDGE	88.681	(IN)
STRUT LEADING EDGE	57.845	(IN)
STRUT TRAILING EDGE	66.445	(IN)
COMBUSTOR EXIT	66.445	(IN)

INLET

ANGLE OF ATTACK	3.000	(DEGREES)
MASS FLOW RATIO	0.9039	
ADDITIVE DRAG COEFFICIENT	0.0087	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0885	
DELTA PT2	0.0824	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.2403	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.0897	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8903	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9094	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.8921	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8490	
ENTHALPY AT P0 - SUPERSONIC	-29.30	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	3.10	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0260
EQUIVALENCE RATIO	0.785
COMBUSTOR EFFICIENCY	1.000
TOTAL PRESSURE RATIO	0.0977
COMBUSTOR EFFECTIVENESS	0.2622

INJECTOR DISCHARGE COEFFICIENTS 0.5973, 0.8652, 0.6445,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9446
NOZZLE COEFFICIENT - CT	0.8607
PROCESS EFFICIENCY	0.8610
KINETIC ENERGY EFFICIENCY	0.8761

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.690	B
1C	44.300	
2A	50.165	
2C	46.250	E
3A	55.455	
3B	57.640	
4	46.190	C

Reading 91

t = 226.95 sec.

RAMJET PERFORMANCE

S U M M A R Y R E P O R T

X	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	K	A/AC	MOPTM	Q	TVAC	PHI	ETAC
WIND TUNNEL		1	0 6														
0.000	994.999	3080	694.0(818)	1.2903	28.956	2612											
0.000	0.154	298	-57.6(71)	1.3965	28.955	845	7.258	6133	1.816	0.05932	13.735	0.0039	2653	5.654	193.2		
SPIKE TIP NB		2	0 7														
0.600	11.187	3080	694.0(818)	1.2899	28.955	2612											
0.600	10.304	3024	676.8(802)	1.2918	28.955	2590	0.359	929	2.124	0.05932	13.735	0.0039	2782	0.857	202.6		
WIND TUNNEL		3	0 0														
0.000	994.999	3080	694.0(818)	1.2903	28.956	2612											
0.000	0.167	305	-55.9(73)	1.3967	28.955	855	7.167	6126	1.816	0.06278	14.535	0.0039	2806	5.977	193.0		
SPIKE TIP NB		4	0 0														
0.600	11.187	3080	694.0(818)	1.2899	28.955	2612											
0.600	10.184	3016	674.3(799)	1.2921	28.955	2587	0.384	992	2.124	0.06278	14.535	0.0039	2806	0.968	193.0		
INLET THROAT		5	0 2														
40.400	240.181	2903	640.4(766)	1.2959	28.955	2542											
40.400	10.288	1338	199.6(328)	1.3574	28.955	1766	2.659	4696	1.895	0.67651	13.735	0.0793	2214	49.376	161.2		
INLET UPNRSK		6	0 3														
40.400	240.181	2903	640.4(766)	1.2959	28.955	2542											
40.400	8.855	1286	186.1(315)	1.3606	28.955	1733	2.750	4768	1.895	0.61501	13.735	0.0872	2233	45.570	162.6		
INLET DNNRSK		7	0 8														
40.400	89.246	2903	640.4(766)	1.2959	28.955	2542											
40.400	77.162	2808	611.9(738)	1.2989	28.955	2503	0.477	1194	1.963	0.61501	13.735	0.0872	2233	11.416	162.6		
COMBUSTOR	0	8	1 2														
40.410	240.200	2903	640.3(766)	1.2959	28.955	2542											
40.410	10.284	1338	199.5(328)	1.3574	28.955	1766	2.660	4696	1.895	0.67643	13.735	0.0793	2214	49.369	161.2		
COMBUSTOR	0	9	2 3														
40.715	240.202	2894	637.7(764)	1.2961	28.955	2538											
40.715	10.314	1334	198.6(327)	1.3577	28.955	1764	2.658	4688	1.894	0.67887	13.735	0.0790	2210	49.454	160.9		
COMBUSTOR	0	10	3 4														
41.205	222.538	2880	633.4(759)	1.2966	28.955	2532											
41.205	10.614	1364	206.3(335)	1.3559	28.955	1782	2.594	4623	1.898	0.67411	13.735	0.0795	2190	48.431	159.4		
COMBUSTOR	0	11	4 4														
41.500	203.396	2871	630.7(757)	1.2969	28.955	2529											
41.500	10.983	1404	216.8(346)	1.3535	28.955	1806	2.520	4551	1.903	0.66710	13.735	0.0804	2169	47.182	157.9		
COMBUSTOR	0	12	5 5														
42.460	162.257	2841	621.8(748)	1.2978	28.955	2516											
42.460	11.400	1486	238.4(367)	1.3488	28.955	1855	2.361	4380	1.916	0.62979	13.735	0.0851	2118	42.870	154.2		
COMBUSTOR	0	13	6 21														
42.690	91.544	2785	637.3(819)	1.3027	25.884	2640											
42.690	6.793	1465	224.5(404)	1.3931	25.884	1951	2.329	4545	2.137	0.62832	13.863	0.0861	2108	44.378	152.1	0.28	0.07
COMBUSTOR	0	14	7 21														
42.700	104.148	2689	637.2(785)	1.3070	25.787	2603											
42.700	6.835	1362	225.0(375)	1.3597	25.787	1890	2.403	4542	2.118	0.62823	13.863	0.0862	2108	44.339	152.0	0.28	0.01
COMBUSTOR	0	15	8 21														
42.765	106.594	2673	636.6(780)	1.3078	25.773	2597											
42.765	7.113	1358	228.6(374)	1.3600	25.773	1888	2.393	4519	2.114	0.62591	13.863	0.0865	2105	43.953	151.8	0.28	0.00
COMBUSTOR	0	16	9 5														
44.310	74.760	3225	624.0(951)	1.2812	26.394	2790											
44.310	24.488	2503	384.2(717)	1.3059	26.396	2481	1.396	3463	2.185	0.57869	13.863	0.0935	2079	31.145	150.0	0.28	0.40
COMBUSTOR	0	17	10 4														
44.800	69.989	3420	620.3(1018)	1.2712	26.623	2849											
44.800	29.999	2840	422.8(821)	1.2917	26.627	2617	1.201	3144	2.202	0.57223	13.863	0.0946	2081	27.955	150.1	0.28	0.54
COMBUSTOR	0	18	11 4														
45.485	68.581	3550	615.4(1053)	1.2640	26.788	2886											
45.485	36.573	3104	460.4(905)	1.2804	26.794	2716	1.025	2785	2.209	0.56893	13.863	0.0951	2091	24.692	150.8	0.28	0.65

READING = 0091 BLOCK = 131 TIME = 226.951 MACH 7.3 PT = 994.999 TT = 3080.4

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 3														
46.190	67.643	3570	612.6(1081)	1.2632	26.263	2922											
46.190	37.378	3146	462.0(937)	1.2789	26.269	2760	0.995	2745	2.250	0.55436	13.890	0.0978	2121	23.645	152.7	0.34	0.59
COMBUSTOR	0	20	13 2														
46.200	67.689	3568	612.4(1080)	1.2632	26.261	2921											
46.200	37.389	3144	461.9(937)	1.2790	26.267	2759	0.995	2745	2.249	0.55482	13.890	0.0977	2121	23.667	152.7	0.34	0.59
COMBUSTOR	0	21	14 9														
46.250	66.527	2961	629.8(1001)	1.2963	22.582	2907											
46.250	37.446	2591	489.5(863)	1.3088	22.582	2732	0.969	2649	2.444	0.55944	14.062	0.0981	2099	23.029	149.3	0.72	0.17
COMBUSTOR	0	22	15 2														
46.260	66.497	2962	629.6(1001)	1.2963	22.583	2908											
46.260	37.458	2593	489.5(863)	1.3088	22.584	2733	0.969	2648	2.444	0.55904	14.062	0.0982	2099	23.002	149.3	0.72	0.17
COMBUSTOR	0	23	16 4														
47.310	63.572	3110	615.1(1054)	1.2888	22.753	2959											
47.310	38.656	2777	487.3(929)	1.3001	22.754	2809	0.900	2529	2.459	0.51823	14.062	0.1059	2154	20.364	153.2	0.72	0.23
COMBUSTOR	0	24	17 4														
48.110	60.153	3308	602.3(1124)	1.2785	22.971	3025											
48.110	36.740	2966	468.6(995)	1.2906	22.973	2878	0.899	2586	2.478	0.47631	14.062	0.1153	2215	19.143	157.5	0.72	0.30
COMBUSTOR	0	25	18 4														
48.725	56.749	3620	592.4(1238)	1.2614	23.302	3121											
48.725	30.725	3178	414.7(1069)	1.2782	23.310	2944	1.013	2982	2.503	0.43473	14.062	0.1263	2297	20.143	163.3	0.72	0.41
COMBUSTOR	0	26	19 4														
50.175	53.849	3871	573.2(1329)	1.2456	23.608	3186											
50.175	17.537	3068	246.6(1021)	1.2779	23.629	2872	1.408	4042	2.519	0.35329	14.062	0.1554	2465	22.194	175.3	0.72	0.51
COMBUSTOR	0	27	20 4														
50.705	58.283	3643	568.2(1245)	1.2590	23.386	3123											
50.705	12.717	2614	166.1(856)	1.2972	23.397	2684	1.671	4486	2.499	0.33041	14.062	0.1662	2502	23.033	177.9	0.72	0.44
COMBUSTOR	0	28	21 5														
52.115	49.877	3965	556.9(1365)	1.2386	23.750	3206											
52.115	11.875	2951	143.7(974)	1.2802	23.781	2810	1.618	4548	2.528	0.28160	14.062	0.1950	2581	19.901	183.5	0.72	0.56
COMBUSTOR	0	29	22 5														
54.215	57.165	3637	540.6(1246)	1.2588	23.349	3122											
54.215	6.725	2262	10.6(731)	1.3090	23.360	2510	2.052	5150	2.505	0.23148	14.103	0.2379	2667	18.525	189.1	0.73	0.46
COMBUSTOR	0	30	23 4														
54.715	50.392	3816	537.5(1312)	1.2476	23.542	3171											
54.715	7.217	2514	23.4(819)	1.2974	23.562	2623	1.933	5072	2.526	0.22202	14.103	0.2480	2682	17.500	190.2	0.73	0.52
COMBUSTOR	0	31	24 3														
55.465	50.994	3782	533.0(1300)	1.2496	23.518	3161											
55.465	6.389	2411	-4.2(782)	1.3010	23.536	2574	2.014	5185	2.522	0.20929	14.103	0.2631	2703	16.863	191.7	0.73	0.51
COMBUSTOR	0	32	25 3														
55.760	51.572	3760	531.3(1291)	1.2510	23.499	3155											
55.760	6.063	2358	-15.6(763)	1.3036	23.516	2549	2.052	5231	2.520	0.20470	14.103	0.2690	2711	16.641	192.2	0.73	0.50
COMBUSTOR	0	33	26 4														
56.225	46.767	3792	528.8(1303)	1.2485	23.539	3162											
56.225	4.409	2265	-65.8(729)	1.3065	23.559	2499	2.183	5454	2.530	0.16191	14.103	0.3401	2775	13.724	196.8	0.73	0.52
COMBUSTOR	0	34	27 4														
57.650	46.098	3812	522.0(1310)	1.2470	23.577	3166											
57.650	3.931	2227	-94.3(715)	1.3074	23.598	2477	2.242	5553	2.531	0.14965	14.103	0.3679	2805	12.915	198.9	0.73	0.53
COMBUSTOR	0	35	28 5														
57.705	37.494	4098	521.8(1416)	1.2261	23.883	3234											
57.705	4.889	2699	-50.9(880)	1.2861	23.936	2685	1.994	5353	2.562	0.14928	14.103	0.3689	2806	12.418	198.9	0.73	0.63
COMBUSTOR	0	36	29 3														
57.845	37.557	4090	521.1(1413)	1.2267	23.876	3232											
57.845	4.780	2681	-54.4(874)	1.2868	23.928	2677	2.004	5366	2.562	0.14816	14.103	0.3717	2807	12.356	199.1	0.73	0.63
COMBUSTOR	0	37	30 21														
57.925	23.171	4850	520.8(1696)	1.1565	24.743	3357											
57.925	3.618	3711	-112.7(1240)	1.2179	25.198	2986	1.885	5630	2.622	0.14984	14.103	0.3675	2808	13.110	199.1	0.73	1.00

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	C	IVAC	PHI	ETAC
COMBUSTOR	0	38	31 21														
58.205	22.409	4845	519.6(1694)	1.1562	24.741	3355											
58.205	3.300	3671	-130.5(1225)	1.2203	25.203	2973	1.919	5703	2.624	0.14932	14.103	0.3688	2812	13.235	199.4	0.73	1.00
COMBUSTOR	0	39	32 21														
58.431	21.925	4842	518.7(1693)	1.1561	24.739	3354											
58.431	3.116	3646	-141.3(1215)	1.2217	25.206	2964	1.939	5747	2.626	0.14909	14.103	0.3693	2814	13.315	199.5	0.73	1.00
COMBUSTOR	0	40	33 21														
59.155	19.819	4829	516.0(1688)	1.1552	24.731	3349											
59.155	2.525	3571	-173.9(1186)	1.2259	25.214	2938	2.000	5875	2.633	0.14672	14.103	0.3753	2818	13.397	199.8	0.73	1.00
COMBUSTOR	0	41	34 21														
60.175	24.784	4846	512.0(1694)	1.1578	24.762	3356											
60.175	4.250	3758	-92.2(1258)	1.2157	25.193	3003	1.831	5499	2.615	0.14579	14.103	0.3777	2821	12.458	200.1	0.73	1.00
COMBUSTOR	0	42	35 21														
62.185	26.778	4843	503.8(1693)	1.1592	24.781	3356											
62.185	5.350	3845	-53.2(1292)	1.2110	25.181	3032	1.741	5279	2.607	0.15086	14.103	0.3650	2814	12.378	199.6	0.73	1.00
COMBUSTOR	0	43	36 21														
63.605	27.788	4840	498.4(1691)	1.1600	24.792	3355											
63.605	6.000	3887	-34.0(1309)	1.2088	25.175	3046	1.694	5162	2.603	0.15495	14.103	0.3553	2809	12.429	199.1	0.73	1.00
COMBUSTOR	0	44	37 200														
66.069	26.812	4825	489.7(1685)	1.1603	24.799	3350											
66.069	8.496	4120	80.3(1401)	1.1934	25.121	3120	1.451	4526	2.604	0.14688	14.103	0.3749	2800	10.331	198.5	0.73	1.00
COMBUSTOR	0	45	38 200														
66.445	24.884	4817	488.4(1682)	1.1596	24.793	3347											
66.445	8.283	4144	94.0(1410)	1.1911	25.110	3126	1.421	4402	2.609	0.13655	14.103	0.4032	2799	9.427	198.4	0.73	1.00
COMBUSTOR	REGEN	46	39 3														
66.445	24.884	5034	675.1(1773)	1.1486	24.535	3423											
66.445	8.014	4393	246.3(1510)	1.1696	24.973	3198	1.448	4632	2.647	0.13655	14.103	0.4032	2858	9.830	202.7	0.73	1.00
NOZZLE	AE	47	40 5														
88.681	24.884	4817	488.4(1585)	1.1596	24.793	3347											
88.681	0.592	2503	-591.1(788)	1.2780	25.251	2510	2.928	7350	2.609	0.02843	14.103	1.9371	3516	3.247	249.3	0.73	1.00
NOZZLE	PO	48	41 5														
88.681	24.884	4817	488.4(1585)	1.1596	24.793	3347											
88.681	0.154	1846	-820.7(559)	1.3051	25.252	2178	3.716	8094	2.609	0.01101	14.103	5.0007	3745	1.385	265.5	0.73	1.00
NOZZLE	AE REGEN	49	42 5														
88.681	24.884	5034	675.1(1773)	1.1486	24.535	3423											
88.681	0.650	2829	-470.8(907)	1.2650	25.249	2655	2.852	7572	2.647	0.02843	14.103	1.9371	3642	3.345	258.2	0.73	1.00
NOZZLE	PO REGEN	50	43 5														
88.681	24.884	5034	675.1(1773)	1.1486	24.535	3423											
88.681	0.154	2063	-746.7(633)	1.2953	25.252	2294	3.677	8435	2.647	0.01027	14.103	5.3623	3908	1.346	277.1	0.73	1.00
FICTIVE COMBUSTR	68	61	0														
66.445	240.181	4997	488.4(1751)	1.1841	24.999	3430											
66.445	0.154	1044	-1076.6(303)	1.3525	25.252	1668	5.306	8849	2.428	0.02128	14.103	2.5875	3981	2.927	282.3	0.73	1.00
FICTIVE NOZZLE	69	62	0														
88.681	18.273	4742	452.4(1652)	1.1589	24.805	3319											
88.681	0.672	2696	-520.6(858)	1.2706	25.251	2597	2.687	6977	2.627	0.02843	14.103	1.9371	3392	3.082	240.5	0.73	1.00

XABS	P-IB	P-OB	PDA	COX	Q-IP	Q-OB	CAWALL	P-TB/P80	P-IB/PT0	P-OB/P80	P-OB/PT0
6.981E-01	6.900E-01	0.000	-2.702E-01	0.000	0.000	0.000	2.470E-02	4.489E 00	6.935E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.489E 00	6.935E-04	0.000	0.000
3.070E 01	1.520E 00	0.000	-1.125E 02	0.000	0.000	0.000	5.053E 02	9.890E 00	1.528E-03	0.000	0.000
3.508E 01	1.954E 00	0.000	-2.251E 02	0.000	0.000	0.000	6.804E 02	1.271E 01	1.964E-03	0.000	0.000
3.555E 01	2.225E 00	0.000	-2.442E 02	0.000	0.000	0.000	7.013E 02	1.448E 01	2.236E-03	0.000	0.000
3.606E 01	2.495E 00	0.000	-2.681E 02	-4.141E 02	-4.141E 02	0.000	7.246E 02	1.623E 01	2.508E-03	0.000	0.000
3.648E 01	2.241E 00	0.000	-2.884E 02	-4.241E 02	-4.241E 02	0.000	7.443E 02	1.458E 01	2.253E-03	0.000	0.000
3.658E 01	2.320E 00	3.189E 00	-3.263E 02	-4.266E 02	-4.266E 02	0.000	7.491E 02	1.509E 01	2.331E-03	2.075E 01	3.205E-03
3.659E 01	2.324E 00	3.216E 00	-3.264E 02	-4.268E 02	-4.268E 02	0.000	7.494E 02	1.512E 01	2.336E-03	2.093E 01	3.232E-03
3.701E 01	2.645E 00	5.158E 00	-3.278E 02	-4.373E 02	-4.373E 02	0.000	7.931E 02	1.721E 01	2.658E-03	3.356E 01	5.184E-03
3.725E 01	2.472E 00	6.287E 00	-3.259E 02	-4.437E 02	-4.437E 02	0.000	8.188E 02	1.608E 01	2.484E-03	4.091E 01	6.319E-03
3.803E 01	1.925E 00	8.875E 00	-3.029E 02	-4.650E 02	-4.650E 02	0.000	9.020E 02	1.252E 01	1.935E-03	5.775E 01	8.920E-03
3.871E 01	7.493E 00	1.116E 01	-3.050E 02	-5.559E 02	-4.866E 02	-6.925E 01	9.785E 02	4.875E 01	7.530E-03	7.263E 01	1.122E-02
3.875E 01	7.777E 00	1.105E 01	-3.060E 02	-5.593E 02	-4.878E 02	-7.149E 01	9.825E 02	5.060E 01	7.816E-03	7.187E 01	1.110E-02
3.901E 01	9.890E 00	1.019E 01	-3.152E 02	-5.854E 02	-4.972E 02	-8.812E 01	1.012E 03	6.435E 01	9.940E-03	6.629E 01	1.024E-02
3.950E 01	1.402E 01	8.570E 00	-3.436E 02	-6.363E 02	-5.170E 02	-1.193E 02	1.068E 03	9.125E 01	1.410E-02	5.576E 01	8.613E-03
3.974E 01	1.209E 01	7.794E 00	-3.563E 02	-6.617E 02	-5.274E 02	-1.343E 02	1.095E 03	7.867E 01	1.215E-02	5.071E 01	7.833E-03
4.000E 01	9.912E 00	9.869E 00	-3.628E 02	-6.910E 02	-5.400E 02	-1.511E 02	1.126E 03	6.449E 01	9.962E-03	6.421E 01	9.919E-03
4.021E 01	1.048E 01	1.147E 01	-3.640E 02	-7.143E 02	-5.502E 02	-1.640E 02	1.150E 03	6.822E 01	1.054E-02	7.466E 01	1.153E-02
4.040E 01	1.103E 01	1.180E 01	-3.641E 02	-7.367E 02	-5.604E 02	-1.763E 02	1.172E 03	7.176E 01	1.108E-02	7.681E 01	1.186E-02
4.041E 01	1.106E 01	1.182E 01	-3.640E 02	-7.378E 02	-5.609E 02	-1.769E 02	1.174E 03	7.194E 01	1.111E-02	7.692E 01	1.188E-02
4.071E 01	1.191E 01	1.234E 01	-3.638E 02	-7.736E 02	-5.774E 02	-1.961E 02	1.209E 03	7.748E 01	1.197E-02	8.027E 01	1.240E-02
4.121E 01	1.328E 01	2.487E 00	-3.770E 02	-8.326E 02	-6.061E 02	-2.265E 02	1.267E 03	8.638E 01	1.334E-02	1.618E 01	2.500E-03
4.150E 01	1.410E 01	2.483E 00	-3.938E 02	-8.690E 02	-6.247E 02	-2.444E 02	1.302E 03	9.174E 01	1.417E-02	1.616E 01	2.496E-03
4.246E 01	9.150E 00	2.470E 00	-4.315E 02	-9.920E 02	-6.875E 02	-3.045E 02	1.416E 03	5.953E 01	9.196E-03	1.607E 01	2.482E-03
4.269E 01	1.112E 01	2.467E 00	-4.382E 02	-1.021E 03	-7.023E 02	-3.192E 02	1.443E 03	7.234E 01	1.117E-02	1.605E 01	2.479E-03
4.270E 01	1.120E 01	2.467E 00	-4.385E 02	-1.023E 03	-7.029E 02	-3.198E 02	1.444E 03	7.290E 01	1.126E-02	1.605E 01	2.479E-03
4.276E 01	1.176E 01	2.466E 00	-4.407E 02	-1.031E 03	-7.070E 02	-3.238E 02	1.452E 03	7.652E 01	1.182E-02	1.604E 01	2.478E-03
4.431E 01	2.498E 01	2.400E 01	-4.469E 02	-1.207E 03	-7.864E 02	-4.202E 02	1.638E 03	1.625E 02	2.511E-02	1.561E 02	2.412E-02
4.480E 01	2.917E 01	3.082E 01	-4.390E 02	-1.257E 03	-8.051E 02	-4.515E 02	1.698E 03	1.898E 02	2.932E-02	2.005E 02	3.098E-02
4.549E 01	3.278E 01	4.037E 01	-4.218E 02	-1.325E 03	-8.292E 02	-4.954E 02	1.782E 03	2.133E 02	3.294E-02	2.627E 02	4.057E-02
4.619E 01	3.648E 01	3.827E 01	-3.842E 02	-1.416E 03	-8.541E 02	-5.615E 02	1.868E 03	2.374E 02	3.667E-02	2.490E 02	3.846E-02
4.620E 01	3.654E 01	3.824E 01	-3.846E 02	-1.417E 03	-8.545E 02	-5.627E 02	1.869E 03	2.377E 02	3.672E-02	2.488E 02	3.843E-02
4.625E 01	3.680E 01	3.809E 01	-3.806E 02	-1.425E 03	-8.563E 02	-5.691E 02	1.875E 03	2.394E 02	3.699E-02	2.478E 02	3.828E-02
4.626E 01	3.685E 01	3.806E 01	-3.800E 02	-1.427E 03	-8.566E 02	-5.703E 02	1.877E 03	2.398E 02	3.704E-02	2.476E 02	3.825E-02
4.731E 01	4.237E 01	3.494E 01	-3.160E 02	-1.632E 03	-8.944E 02	-7.371E 02	2.006E 03	2.757E 02	4.259E-02	2.273E 02	3.511E-02
4.811E 01	4.092E 01	3.256E 01	-2.484E 02	-1.812E 03	-9.236E 02	-8.882E 02	2.105E 03	2.663E 02	4.113E-02	2.118E 02	3.272E-02
4.872E 01	3.072E 01	3.072E 01	-1.614E 02	-1.951E 03	-9.462E 02	-1.005E 03	2.182E 03	1.999E 02	3.088E-02	1.999E 02	3.088E-02
5.017E 01	1.754E 01	1.754E 01	1.896E 01	-2.221E 03	-1.000E 03	-1.220E 03	2.363E 03	1.141E 02	1.763E-02	1.141E 02	1.763E-02
5.071E 01	1.272E 01	1.272E 01	6.076E 01	-2.290E 03	-1.021E 03	-1.269E 03	2.429E 03	8.274E 01	1.278E-02	8.274E 01	1.278E-02
5.211E 01	1.187E 01	1.187E 01	1.517E 02	-2.449E 03	-1.075E 03	-1.374E 03	2.607E 03	7.726E 01	1.193E-02	7.726E 01	1.193E-02
5.421E 01	6.725E 00	6.725E 00	2.541E 02	-2.657E 03	-1.158E 03	-1.499E 03	2.873E 03	4.376E 01	6.759E-03	4.376E 01	6.759E-03
5.471E 01	7.217E 00	7.217E 00	2.722E 02	-2.700E 03	-1.178E 03	-1.522E 03	2.937E 03	4.695E 01	7.253E-03	4.695E 01	7.253E-03
5.546E 01	6.389E 00	6.389E 00	2.985E 02	-2.764E 03	-1.208E 03	-1.555E 03	3.033E 03	4.157E 01	6.421E-03	4.157E 01	6.421E-03
5.576E 01	6.063E 00	6.063E 00	3.079E 02	-2.789E 03	-1.221E 03	-1.568E 03	3.070E 03	3.945E 01	6.094E-03	3.945E 01	6.094E-03
5.622E 01	3.269E 00	5.550E 00	3.736E 02	-2.824E 03	-1.236E 03	-1.588E 03	3.102E 03	2.127E 01	3.285E-03	3.611E 01	5.578E-03
5.765E 01	3.931E 00	3.931E 00	4.073E 02	-2.919E 03	-1.275E 03	-1.644E 03	3.210E 03	2.557E 01	3.950E-03	2.557E 01	3.950E-03
5.771E 01	5.850E 00	3.868E 00	4.084E 02	-2.923E 03	-1.277E 03	-1.646E 03	3.217E 03	3.806E 01	5.879E-03	2.517E 01	3.888E-03
5.785E 01	5.850E 00	3.709E 00	4.109E 02	-2.932E 03	-1.281E 03	-1.651E 03	3.234E 03	3.806E 01	5.879E-03	2.413E 01	3.728E-03
5.792E 01	3.618E 00	3.618E 00	4.123E 02	-2.937E 03	-1.283E 03	-1.654E 03	3.245E 03	2.354E 01	3.636E-03	2.354E 01	3.636E-03
5.821E 01	3.300E 00	3.300E 00	4.169E 02	-2.953E 03	-1.290E 03	-1.663E 03	3.280E 03	2.147E 01	3.317E-03	2.147E 01	3.317E-03
5.843E 01	3.116E 00	3.116E 00	4.200E 02	-2.966E 03	-1.297E 03	-1.670E 03	3.309E 03	2.027E 01	3.131E-03	2.027E 01	3.131E-03
5.915E 01	2.525E 00	2.525E 00	4.276E 02	-3.004E 03	-1.316E 03	-1.688E 03	3.402E 03	1.643E 01	2.538E-03	1.643E 01	2.538E-03
6.017E 01	4.250E 00	4.250E 00	4.355E 02	-3.060E 03	-1.344E 03	-1.716E 03	3.532E 03	2.765E 01	4.271E-03	2.765E 01	4.271E-03
6.218E 01	5.350E 00	5.350E 00	4.366E 02	-3.176E 03	-1.397E 03	-1.779E 03	3.790E 03	3.481E 01	5.377E-03	3.481E 01	5.377E-03
6.360E 01	6.000E 00	6.000E 00	4.366E 02	-3.252E 03	-1.430E 03	-1.822E 03	3.972E 03	3.904E 01	6.030E-03	3.904E 01	6.030E-03

READING = 0091 BLOCK = 131 TIME = 226.951 MACH 7.3 PT = 994.999 TT = 3080.4

XARB	P-IR	P-OB	PDA	QOX	Q-IF	Q-OB	CAWALL	P-TH/PRO	P-IP/PTO	P-OB/PSU	P-OB/PTO
6.607E 01	8.496E 00	8.496E 00	4.366E 02	-3.375E 03	-1.469E 03	-1.906E 03	4.289E 03	5.528E 01	8.539E-03	5.528E 01	8.539E-03
6.644E 01	7.610E 00	8.877E 00	4.366E 02	-3.393E 03	-1.473E 03	-1.920E 03	4.337E 03	4.951E 01	7.648E-03	5.776E 01	8.921E-03
6.649E 01	7.610E 00	8.917E 00	4.366E 02	-3.395E 03	-1.473E 03	-1.922E 03	4.342E 03	4.951E 01	7.648E-03	5.802E 01	8.962E-03
6.668E 01	7.341E 00	9.120E 00	4.366E 02	-3.404E 03	-1.475E 03	-1.929E 03	4.368E 03	4.776E 01	7.378E-03	5.934E 01	9.166E-03
6.835E 01	5.105E 00	4.650E 00	5.104E 02	-3.487E 03	-1.500E 03	-1.987E 03	4.584E 03	3.321E 01	5.131E-03	3.025E 01	4.673E-03
6.901E 01	3.960E 00	4.957E 00	6.048E 02	-3.525E 03	-1.514E 03	-2.011E 03	4.665E 03	2.577E 01	3.980E-03	3.226E 01	4.982E-03
6.978E 01	2.645E 00	3.750E 00	7.093E 02	-3.573E 03	-1.532E 03	-2.040E 03	4.760E 03	1.721E 01	2.658E-03	2.440E 01	3.768E-03
7.050E 01	2.001E 00	2.620E 00	7.798E 02	-3.620E 03	-1.548E 03	-2.071E 03	4.848E 03	1.302E 01	2.011E-03	1.705E 01	2.633E-03
7.111E 01	1.455E 00	2.335E 00	8.248E 02	-3.657E 03	-1.561E 03	-2.096E 03	4.922E 03	9.467E 00	1.462E-03	1.519E 01	2.347E-03
7.249E 01	8.900E-01	1.690E 00	8.960E 02	-3.717E 03	-1.585E 03	-2.132E 03	5.088E 03	5.791E 00	8.945E-04	1.100E 01	1.698E-03
7.402E 01	7.496E-01	9.750E-01	9.460E 02	-3.762E 03	-1.606E 03	-2.156E 03	5.273E 03	4.877E 00	7.534E-04	6.344E 00	9.799E-04
7.492E 01	6.670E-01	2.300E-01	9.707E 02	-3.789E 03	-1.616E 03	-2.172E 03	5.372E 03	4.340E 00	6.704E-04	1.496E 00	2.312E-04
7.493E 01	6.667E-01	2.267E-01	9.711E 02	-3.789E 03	-1.616E 03	-2.173E 03	5.372E 03	4.338E 00	6.700E-04	1.475E 00	2.278E-04
7.625E 01	5.450E-01	0.000	9.839E 02	-3.830E 03	-1.629E 03	-2.201E 03	5.424E 03	3.546E 00	5.077E-04	0.000	0.000
7.910E 01	5.700E-01	0.000	1.006E 03	-3.850E 03	-1.649E 03	-2.201E 03	5.523E 03	3.709E 00	5.729E-04	0.000	0.000
8.300E 01	5.550E-01	0.000	1.030E 03	-3.867E 03	-1.665E 03	-2.201E 03	5.627E 03	3.611E 00	5.578E-04	0.000	0.000
8.581E 01	5.900E-01	0.000	1.043E 03	-3.879E 03	-1.678E 03	-2.201E 03	5.682E 03	3.839E 00	5.930E-04	0.000	0.000
8.867E 01	6.400E-01	0.000	1.058E 03	-3.901E 03	-1.700E 03	-2.201E 03	5.705E 03	4.164E 00	6.432E-04	0.000	0.000
8.868E 01	6.401E-01	0.000	1.058E 03	-3.901E 03	-1.700E 03	-2.201E 03	5.705E 03	4.165E 00	6.433E-04	0.000	0.000

READING = 0091 BLOCK = 131 TIME = 226.951 MACH 7.3 PT = 994.999 TT = 3080.4

X	DDRAG	CDRAG	CF	HC
4.040E 01	9.205E 01	9.205E 01	2.365E-03	3.319E-02
4.041E 01	1.370E-01	9.219E 01	2.365E-03	3.316E-02
4.071E 01	4.173E 00	9.636E 01	2.366E-03	3.330E-02
4.121E 01	6.723E 00	1.031E 02	2.404E-03	3.372E-02
4.150E 01	4.041E 00	1.071E 02	2.450E-03	3.417E-02
4.246E 01	1.284E 01	1.200E 02	2.551E-03	3.389E-02
4.269E 01	3.563E 00	1.235E 02	3.394E-03	2.119E-02
4.270E 01	1.632E-01	1.237E 02	2.821E-03	2.435E-02
4.276E 01	9.520E-01	1.246E 02	2.716E-03	2.563E-02
4.431E 01	1.958E 01	1.442E 02	2.885E-03	5.461E-02
4.480E 01	5.428E 00	1.496E 02	3.282E-03	5.234E-02
4.549E 01	7.370E 00	1.570E 02	3.428E-03	5.351E-02
4.619E 01	7.232E 00	1.643E 02	3.513E-03	5.200E-02
4.620E 01	1.027E-01	1.644E 02	3.513E-03	5.200E-02
4.625E 01	5.221E-01	1.649E 02	3.805E-03	4.940E-02
4.626E 01	1.021E-01	1.650E 02	3.366E-03	5.853E-02
4.731E 01	9.404E 00	1.744E 02	3.331E-03	5.723E-02
4.811E 01	6.550E 00	1.809E 02	3.359E-03	5.379E-02
4.872E 01	5.029E 00	1.860E 02	3.332E-03	5.007E-02
5.017E 01	1.254E 01	1.985E 02	3.206E-03	3.834E-02
5.071E 01	4.871E 00	2.034E 02	3.274E-03	3.059E-02
5.211E 01	1.209E 01	2.155E 02	3.072E-03	2.967E-02
5.421E 01	1.587E 01	2.313E 02	3.130E-03	1.913E-02
5.471E 01	3.476E 00	2.348E 02	2.926E-03	2.092E-02
5.546E 01	4.881E 00	2.397E 02	3.003E-03	1.857E-02
5.576E 01	1.890E 00	2.416E 02	2.972E-03	1.795E-02
5.622E 01	1.386E 00	2.430E 02	2.851E-03	1.381E-02
5.765E 01	4.067E 00	2.470E 02	2.821E-03	1.257E-02
5.771E 01	2.542E-01	2.473E 02	2.877E-03	1.439E-02
5.785E 01	6.531E-01	2.479E 02	3.056E-03	1.356E-02
5.792E 01	4.338E-01	2.484E 02	3.600E-03	9.960E-03
5.821E 01	1.694E 00	2.501E 02	3.608E-03	9.311E-03
5.843E 01	1.382E 00	2.514E 02	3.612E-03	8.921E-03
5.915E 01	4.491E 00	2.559E 02	3.648E-03	7.607E-03
6.017E 01	6.062E 00	2.620E 02	3.527E-03	1.105E-02
6.218E 01	1.124E 01	2.732E 02	3.491E-03	1.295E-02
6.360E 01	7.871E 00	2.811E 02	3.475E-03	1.399E-02
6.607E 01	1.259E 01	2.937E 02	3.525E-03	1.672E-02
6.644E 01	1.690E 00	2.954E 02	3.569E-03	1.604E-02
6.649E 01	1.785E-01	2.956E 02	3.622E-03	1.631E-02
6.668E 01	9.211E-01	2.965E 02	3.620E-03	1.628E-02
6.835E 01	7.333E 00	3.038E 02	3.531E-03	1.208E-02
6.901E 01	2.580E 00	3.064E 02	3.512E-03	1.140E-02
6.978E 01	2.755E 00	3.092E 02	3.460E-03	9.153E-03
7.050E 01	2.209E 00	3.114E 02	3.411E-03	7.302E-03
7.111E 01	1.632E 00	3.130E 02	3.383E-03	6.336E-03
7.249E 01	3.139E 00	3.161E 02	3.326E-03	4.773E-03
7.402E 01	2.768E 00	3.189E 02	3.265E-03	3.516E-03
7.492E 01	1.089E 00	3.200E 02	3.173E-03	2.120E-03
7.493E 01	1.407E-03	3.200E 02	3.172E-03	2.113E-03
7.625E 01	4.805E-01	3.205E 02	3.191E-03	2.461E-03
7.910E 01	9.792E-01	3.215E 02	3.181E-03	2.534E-03
8.300E 01	1.046E 00	3.225E 02	3.156E-03	2.464E-03
8.581E 01	5.071E-01	3.230E 02	3.149E-03	2.571E-03
8.867E 01	2.370E-01	3.233E 02	3.146E-03	2.725E-03
8.868E 01	0.000	3.233E 02	3.146E-03	2.725E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	722.	(LBF)
MEASURED THRUST	743.	(LBF)
CALCULATED SPECIFIC IMPULSE	2155.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2218.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.4987	
MEASURED THRUST COEFFICIENT	0.5133	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	3514.	(LBF)
NET THRUST	844.	(LBF)
SPECIFIC IMPULSE	2519.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.5827	

MOMENTUM AND FORCES

INLET FRICTION DRAG	92.0	(LBF)
INLET MOMENTUM CHANGE	-486.2	(LBF)
COMBUSTOR FRICTION DRAG	203.3	(LBF)
COMBUSTOR STRUT DRAG	-13.10	(LBF)
COMBUSTOR MOMENTUM CHANGE	585.	(LBF)
NOZZLE FRICTION DRAG	27.90	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	593.	(LBF)
NOZZLE PRESSURE INTEGRAL	621.	(LBF)
EXTERNAL FRICTION DRAG	41.72	(LBF)
EXTERNAL PRESSURE INTEGRAL	-640.	(LBF)
TOTAL EXTERNAL DRAG	-682.	(LBF)
TOTAL STRUT DRAG	-13.10	(LBF)
CAVITY FORCE	-693.	(LBF)
CALCULATED LOAD CELL FORCE	-652.	(LBF)
MEASURED LOAD CELL FORCE	-630.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, -147.6,

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7050	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.589	(IN)
NOZZLE SHROUD TRAILING EDGE	74.929	(IN)
NOZZLE PLUG TRAILING EDGE	88.481	(IN)
STRUT LEADING EDGE	57.845	(IN)
STRUT TRAILING EDGE	64.445	(IN)
COMBUSTOR EXIT	66.445	(IN)

INLET

ANGLE OF ATTACK	3.000	(DEGREES)
MASS FLOW RATIO	0.9039	
ADDITIVE DRAG COEFFICIENT	0.0087	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0885	
DELTA PT2	0.0822	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.2414	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.0897	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8908	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9095	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.8913	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8480	
ENTHALPY AT P0 - SUPERSONIC	-29.48	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	3.03	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0243
EQUIVALENCE RATIO	0.735
COMBUSTOR EFFICIENCY	1.000
TOTAL PRESSURE RATIO	0.1036
COMBUSTOR EFFECTIVENESS	0.8658
INJECTOR DISCHARGE COEFFICIENTS	0.6014, 0.3774, 0.7807,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9648
NOZZLE COEFFICIENT - CT	0.8855
PROCESS EFFICIENCY	0.9313
KINETIC ENERGY EFFICIENCY	0.9228

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.690	B
1C	44.300	
2A	50.165	
2C	46.250	E
3A	55.455	
3B	57.640	
4	46.190	C

Reading 91

t = 229.65 sec.

READING = 0091 BLOCK = 134 TIME = 229.451 MACH 7.3 PT = 995.499 TT = 3086.3

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	K	A/AC	MOMTM	C	IVAC	PHI	ETAC
WIND TUNNEL		1	0 6														
0.000	995.499	3086	695.8(820)	1.2901	28.956	2615											
0.000	0.154	298	-57.4(71)	1.3969	28.955	846	7.258	6139	1.816	0.05926	13.716	0.9036	2653	5.654	193.4		
SPIKE TIP NB		2	0 7														
0.600	11.175	3086	695.8(820)	1.2897	28.955	2614											
0.600	10.290	3029	678.5(805)	1.2914	28.955	2592	0.359	931	2.124	0.05926	13.716	0.9036	2778	0.888	202.6		
WIND TUNNEL		3	0 0														
0.000	995.499	3086	695.8(820)	1.2901	28.956	2615											
0.000	0.166	305	-55.8(73)	1.3967	28.955	855	7.168	6133	1.816	0.06264	14.497	0.9036	2802	5.970	193.3		
SPIKE TIP NB		4	0 0														
0.600	11.175	3086	695.8(820)	1.2897	28.955	2614											
0.600	10.173	3021	676.1(801)	1.2919	28.955	2589	0.384	993	2.124	0.06264	14.497	0.9036	2802	0.967	193.3		
INLET THROAT		5	0 2														
40.400	241.697	2905	641.0(767)	1.2958	28.955	2542											
40.400	10.243	1336	198.9(328)	1.3576	28.955	1764	2.666	4703	1.895	0.67597	13.716	0.0792	2213	49.410	161.3		
INLET UPNRBK		6	0 3														
40.400	241.697	2905	641.0(767)	1.2958	28.955	2542											
40.400	8.818	1284	185.4(314)	1.3608	28.955	1732	2.757	4775	1.895	0.61452	13.716	0.0871	2232	45.597	162.7		
INLET DNNRBK		7	0 4														
40.400	89.278	2905	641.0(767)	1.2958	28.955	2542											
40.400	77.214	2810	612.5(739)	1.2988	28.955	2503	0.477	1194	1.963	0.61452	13.716	0.0871	2232	11.399	162.7		
COMBUSTOR	0	8	1 3														
40.410	241.716	2905	640.9(767)	1.2958	28.955	2542											
40.410	10.241	1335	198.8(328)	1.3576	28.955	1764	2.666	4703	1.895	0.67588	13.716	0.0792	2213	49.403	161.3		
COMBUSTOR	0	9	2 3														
40.717	241.745	2896	638.2(764)	1.2961	28.955	2539											
40.717	10.269	1332	197.8(327)	1.3578	28.955	1762	2.664	4694	1.894	0.67835	13.716	0.0789	2209	49.488	161.0		
COMBUSTOR	0	10	3 4														
41.207	223.984	2882	633.9(760)	1.2965	28.955	2533											
41.207	10.564	1361	205.5(334)	1.3561	28.955	1780	2.601	4630	1.898	0.67353	13.716	0.0795	2189	48.462	159.6		
COMBUSTOR	0	11	4 4														
41.500	204.836	2873	631.2(757)	1.2968	28.955	2529											
41.500	10.927	1400	215.8(345)	1.3537	28.955	1804	2.527	4559	1.903	0.66656	13.716	0.0803	2168	47.223	158.1		
COMBUSTOR	0	12	5 5														
42.460	163.428	2841	621.7(748)	1.2978	28.955	2516											
42.460	11.309	1480	236.8(364)	1.3491	28.955	1851	2.370	4389	1.915	0.62850	13.716	0.0852	2118	42.867	154.4		
COMBUSTOR	0	13	6 21														
42.692	92.775	2784	637.5(815)	1.3027	25.857	2641											
42.692	6.945	1468	225.4(405)	1.3529	25.857	1955	2.324	4582	2.138	0.62857	13.845	0.0860	2107	44.363	152.2	0.29	0.07
COMBUSTOR	0	14	7 21														
42.702	105.588	2688	637.4(785)	1.3071	25.759	2604											
42.702	6.994	1365	226.0(376)	1.3596	25.759	1892	2.398	4538	2.118	0.62803	13.845	0.0861	2107	44.287	152.2	0.29	0.01
COMBUSTOR	0	15	8 21														
42.767	108.285	2672	636.8(780)	1.3078	25.745	2598											
42.767	7.311	1362	229.8(375)	1.3599	25.745	1891	2.386	4513	2.115	0.62653	13.845	0.0863	2104	43.942	151.9	0.29	0.00
COMBUSTOR	0	16	9 5														
44.310	73.109	3266	623.6(965)	1.2792	26.413	2804											
44.310	25.884	2584	395.9(743)	1.3026	26.415	2517	1.341	3375	2.191	0.57794	13.845	0.0935	2073	30.316	149.7	0.29	0.43
COMBUSTOR	0	17	10 4														
44.800	69.061	3434	620.2(1017)	1.2704	26.612	2855											
44.800	31.783	2898	437.1(841)	1.2895	26.616	2642	1.146	3027	2.205	0.57185	13.845	0.0945	2072	26.901	149.7	0.29	0.55
COMBUSTOR	0	18	11 4														
45.487	68.144	3508	615.5(1041)	1.2663	26.712	2875											
45.487	38.159	3098	473.2(905)	1.2813	26.717	2718	0.982	2669	2.210	0.56838	13.845	0.0951	2078	23.572	150.1	0.29	0.61

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	M	A/AF	MOMTM	C	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 2														
46.192	67.285	3550	611.5(1068)	1.2641	26.398	2907											
46.192	38.516	3152	471.0(934)	1.2788	26.404	2755	0.963	2652	2.238	0.55374	13.863	0.0977	2107	22.823	152.0	0.33	0.60
COMBUSTOR	0	20	13 2														
46.202	67.245	3554	611.4(1070)	1.2638	26.404	2908											
46.202	38.521	3157	470.9(936)	1.2786	26.409	2756	0.962	2652	2.238	0.55308	13.863	0.0979	2108	22.795	152.1	0.33	0.60
COMBUSTOR	0	21	14 9														
46.250	66.160	2937	630.7(987)	1.2974	22.673	2891											
46.250	38.545	2590	500.0(859)	1.3091	22.673	2727	0.938	2557	2.432	0.55840	14.035	0.0981	2084	22.193	148.5	0.71	0.17
COMBUSTOR	0	22	15 2														
46.260	66.148	2938	630.6(988)	1.2973	22.674	2891											
46.260	38.550	2592	499.9(859)	1.3090	22.675	2727	0.938	2557	2.432	0.55816	14.035	0.0982	2085	22.182	148.5	0.71	0.17
COMBUSTOR	0	23	16 4														
47.310	63.283	3088	615.7(1041)	1.2897	22.848	2944											
47.310	39.081	2767	493.1(921)	1.3007	22.848	2798	0.885	2477	2.448	0.51728	14.035	0.1059	2141	19.912	152.3	0.71	0.23
COMBUSTOR	0	24	17 4														
48.110	59.895	3300	602.5(1116)	1.2788	23.081	3015											
48.110	36.749	2962	470.9(989)	1.2907	23.083	2869	0.894	2566	2.468	0.47555	14.035	0.1152	2204	18.962	157.0	0.71	0.31
COMBUSTOR	0	25	18 4														
48.727	56.504	3622	592.3(1232)	1.2612	23.424	3114											
48.727	30.925	3188	418.3(1067)	1.2778	23.431	2940	1.003	2950	2.493	0.43390	14.035	0.1243	2287	19.892	163.0	0.71	0.42
COMBUSTOR	0	26	19 4														
50.177	53.448	3894	572.5(1330)	1.2440	23.755	3184											
50.177	17.688	3101	280.0(1027)	1.2762	23.778	2876	1.397	4017	2.510	0.35261	14.035	0.1554	2456	22.014	175.0	0.71	0.53
COMBUSTOR	0	27	20 4														
50.707	57.653	3670	567.5(1249)	1.2577	23.536	3123											
50.707	12.850	2650	169.4(865)	1.2954	23.548	2692	1.658	4463	2.491	0.32978	14.035	0.1662	2494	22.873	177.7	0.71	0.46
COMBUSTOR	0	28	21 5														
52.117	49.733	3979	555.9(1361)	1.2375	23.889	3201											
52.117	11.850	2960	143.6(974)	1.2794	23.922	2808	1.618	4542	2.518	0.28106	14.035	0.1950	2573	19.838	183.3	0.71	0.57
COMBUSTOR	0	29	22 5														
54.217	54.492	3721	539.2(1271)	1.2536	23.559	3138											
54.217	7.075	2381	19.8(769)	1.3034	23.574	2559	1.992	5098	2.504	0.23104	14.076	0.2379	2661	18.304	189.1	0.72	0.49
COMBUSTOR	0	30	23 4														
54.717	48.930	3885	536.0(1331)	1.2429	23.739	3180											
54.717	7.467	2609	29.5(848)	1.2929	23.764	2656	1.895	5034	2.521	0.22160	14.076	0.2480	2677	17.337	190.2	0.72	0.55
COMBUSTOR	0	31	24 3														
55.467	49.191	3860	531.3(1322)	1.2444	23.724	3173											
55.467	6.651	2518	2.3(815)	1.2963	23.748	2614	1.968	5145	2.519	0.20889	14.076	0.2631	2699	16.703	191.8	0.72	0.55
COMBUSTOR	0	32	25 3														
55.760	49.576	3842	529.6(1315)	1.2456	23.710	3168											
55.760	6.333	2471	-8.8(798)	1.2982	23.732	2592	2.002	5191	2.517	0.20434	14.076	0.2690	2707	16.483	192.3	0.72	0.54
COMBUSTOR	0	33	26 4														
56.227	45.271	3861	527.0(1322)	1.2438	23.736	3172											
56.227	4.556	2354	-62.2(756)	1.3021	23.761	2532	2.144	5430	2.525	0.16160	14.076	0.3401	2772	13.636	197.0	0.72	0.55
COMBUSTOR	0	34	27 4														
57.652	44.457	3889	520.1(1331)	1.2417	23.784	3177											
57.652	4.080	2326	-90.9(745)	1.3025	23.811	2515	2.198	5529	2.527	0.14942	14.076	0.3678	2804	12.839	199.2	0.72	0.56
COMBUSTOR	0	35	28 5														
57.707	36.923	4158	519.8(1431)	1.2214	24.076	3238											
57.707	4.956	2775	-50.0(902)	1.2822	24.140	2707	1.973	5340	2.555	0.14900	14.076	0.3689	2804	12.344	199.2	0.72	0.66
COMBUSTOR	0	36	29 3														
57.847	37.023	4148	519.2(1427)	1.2221	24.067	3236											
57.847	4.870	2754	-53.9(895)	1.2831	24.129	2698	1.985	5355	2.554	0.14790	14.076	0.3716	2806	12.308	199.4	0.72	0.66
COMBUSTOR	0	37	30 21														
57.927	24.198	4830	518.8(1680)	1.1590	24.852	3346											
57.927	3.743	3667	-110.6(1218)	1.2223	25.279	2969	1.890	5612	2.606	0.14955	14.076	0.3675	2808	13.043	199.5	0.72	1.00

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                P       T     H           GAMMA  MOLWT  SONV  MACH  VEL   S      W/A     W      A/AC    MOMTM  C      TVAC  PHI  ETAC
COMBUSTOR       0      38    31   21
58.207      23.432   4825   517.6(1678) 1.1588 24.650 3345
58.207       3.400   3623  -129.7(1201) 1.2248 25.283 2954 1.927 5691 2.609 0.14906 14.076 0.3687  2811 13.183 199.7 0.72 1.00
COMBUSTOR       0      39    32   21
58.433      22.883   4822   516.7(1677) 1.1586 24.848 3343
58.433       3.186   3590  -141.0(1190) 1.2265 25.286 2944 1.950 5741 2.610 0.14875 14.076 0.3695  2813 13.271 199.8 0.72 1.00
COMBUSTOR       0      40    33   21
59.157      20.437   4807   513.9(1671) 1.1576 24.839 3337
59.157       2.500   3505  -179.5(1154) 1.2313 25.294 2913 2.022 5890 2.619 0.14645 14.076 0.3753  2817 13.406 200.2 0.72 1.00
COMBUSTOR       0      41    34   21
60.177      25.896   4825   509.9(1677) 1.1604 24.870 3345
60.177       4.475   3725   -85.5(1240) 1.2190 25.273 2989 1.826 5458 2.599 0.14551 14.076 0.3777  2821 12.343 200.4 0.72 1.00
COMBUSTOR       0      42    35   21
62.187      27.746   4820   501.4(1675) 1.1618 24.888 3345
62.187       5.612   3814   -45.8(1275) 1.2145 25.261 3019 1.733 5233 2.592 0.15058 14.076 0.3650  2814 12.245 199.9 0.72 1.00
COMBUSTOR       0      43    36   21
63.607      28.505   4815   495.8(1673) 1.1625 24.898 3343
63.607       5.987   3830   -39.0(1281) 1.2139 25.260 3025 1.710 5173 2.588 0.15466 14.076 0.3553  2808 12.434 199.5 0.72 1.00
COMBUSTOR       0      44    37  200
66.071      27.301   4799   486.8(1667) 1.1628 24.904 3338
66.071       8.512   4073    76.7(1376) 1.1983 25.210 3102 1.460 4530 2.590 0.14660 14.076 0.3749  2799 10.321 198.9 0.72 1.00
COMBUSTOR       0      45    38  200
66.447      25.275   4790   485.5(1663) 1.1620 24.898 3334
66.447       8.433   4112    97.7(1391) 1.1948 25.196 3114 1.415 4405 2.596 0.13629 14.076 0.4032  2798  9.330 198.8 0.72 1.00
COMBUSTOR   REGEN      46    39    3
66.447      25.275   5023   679.5(1761) 1.1499 24.635 3414
66.447       7.758   4346   237.0(1485) 1.1736 25.076 3180 1.480 4706 2.635 0.13629 14.076 0.4032  2860  9.966 203.2 0.72 1.00
NOZZLE   AE            47    40    5
88.683      25.275   4790   485.5(1565) 1.1620 24.898 3334
88.683       0.578   2445  -587.3( 764) 1.2807 25.324 2479 2.955 7327 2.596 0.02837 14.076 1.9371  3492  3.230 248.1 0.72 1.00
NOZZLE   PO            48    41    5
88.683      25.275   4790   485.5(1565) 1.1620 24.898 3334
88.683       0.154   1810  -807.1( 545) 1.3073 25.324 2155 3.731 8042 2.596 0.01119 14.076 4.9097  3712  1.399 263.7 0.72 1.00
NOZZLE   AE REGEN      49    42    5
88.683      25.275   5023   679.5(1761) 1.1499 24.635 3414
88.683       0.637   2782  -464.2( 886) 1.2675 25.322 2631 2.875 7565 2.635 0.02837 14.076 1.9371  3626  3.336 257.6 0.72 1.00
NOZZLE   PO REGEN      50    43    5
88.683      25.275   5023   679.5(1761) 1.1499 24.635 3414
88.683       0.154   2034  -731.2( 621) 1.2970 25.324 2276 3.691 8402 2.635 0.01040 14.076 5.2820  3884  1.359 275.9 0.72 1.00
FICTIVE  COMBUSTR      68    61    0
66.447     241.697   4959   485.5(1727) 1.1865 25.091 3414
66.447       0.154   1024 -1056.0( 206) 1.3542 25.324 1650 5.322 8783 2.416 0.02160 14.076 2.5442  3943  2.948 280.1 0.72 1.00
FICTIVE  NOZZLE        69    62    0
88.683      20.577   4722   448.0(1636) 1.1628 24.923 3310
88.683       0.623   2545  -551.2( 800) 1.2769 25.323 2526 2.799 7071 2.604 0.02837 14.076 1.9371  3403  3.118 241.7 0.72 1.00
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READING = 0091 BLOCK = 134 TIME = 229.651 MACH 7.3 PT = 995.499 TT = 3086.3

XABS	P-IR	P-OR	PRA	QOX	Q-IR	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.699E-01	0.000	0.000	0.000	2.470E-02	4.488E 00	6.931E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.488E 00	6.931E-04	0.000	0.000
3.070E 01	1.520E 00	0.000	-1.125E 02	0.000	0.000	0.000	5.053E 02	9.887E 00	1.527E-03	0.000	0.000
3.508E 01	1.955E 00	0.000	-2.251E 02	0.000	0.000	0.000	6.804E 02	1.272E 01	1.964E-03	0.000	0.000
3.555E 01	2.225E 00	0.000	-2.442E 02	0.000	0.000	0.000	7.013E 02	1.447E 01	2.235E-03	0.000	0.000
3.606E 01	2.500E 00	0.000	-2.682E 02	-4.233E 02	-4.233E 02	0.000	7.246E 02	1.626E 01	2.511E-03	0.000	0.000
3.648E 01	2.244E 00	0.000	-2.885E 02	-4.335E 02	-4.335E 02	0.000	7.443E 02	1.460E 01	2.255E-03	0.000	0.000
3.658E 01	2.323E 00	3.192E 00	-3.265E 02	-4.361E 02	-4.361E 02	0.000	7.492E 02	1.511E 01	2.333E-03	2.076E 01	3.206E-03
3.659E 01	2.327E 00	3.219E 00	-3.266E 02	-4.363E 02	-4.363E 02	0.000	7.495E 02	1.514E 01	2.338E-03	2.094E 01	3.234E-03
3.701E 01	2.640E 00	5.142E 00	-3.281E 02	-4.471E 02	-4.471E 02	0.000	7.930E 02	1.717E 01	2.652E-03	3.345E 01	5.165E-03
3.726E 01	2.463E 00	6.275E 00	-3.261E 02	-4.536E 02	-4.536E 02	0.000	8.189E 02	1.602E 01	2.474E-03	4.082E 01	6.303E-03
3.803E 01	1.910E 00	8.853E 00	-3.032E 02	-4.753E 02	-4.753E 02	0.000	9.021E 02	1.242E 01	1.919E-03	5.758E 01	8.893E-03
3.872E 01	7.504E 00	1.114E 01	-3.052E 02	-5.678E 02	-4.975E 02	-7.031E 01	9.786E 02	4.881E 01	7.538E-03	7.249E 01	1.119E-02
3.875E 01	7.773E 00	1.104E 01	-3.061E 02	-5.711E 02	-4.987E 02	-7.246E 01	9.824E 02	5.056E 01	7.808E-03	7.178E 01	1.109E-02
3.901E 01	9.890E 00	1.019E 01	-3.154E 02	-5.976E 02	-5.083E 02	-8.934E 01	1.012E 03	6.433E 01	9.935E-03	6.625E 01	1.023E-02
3.950E 01	1.400E 01	8.582E 00	-3.437E 02	-6.496E 02	-5.285E 02	-1.210E 02	1.068E 03	9.108E 01	1.407E-02	5.582E 01	8.621E-03
3.974E 01	1.207E 01	7.806E 00	-3.565E 02	-6.756E 02	-5.393E 02	-1.363E 02	1.095E 03	7.849E 01	1.212E-02	5.078E 01	7.842E-03
4.000E 01	9.919E 00	9.852E 00	-3.628E 02	-7.053E 02	-5.521E 02	-1.532E 02	1.126E 03	6.452E 01	9.964E-03	6.409E 01	9.897E-03
4.021E 01	1.050E 01	1.146E 01	-3.643E 02	-7.293E 02	-5.627E 02	-1.665E 02	1.150E 03	6.827E 01	1.054E-02	7.456E 01	1.151E-02
4.040E 01	1.103E 01	1.179E 01	-3.642E 02	-7.519E 02	-5.730E 02	-1.789E 02	1.172E 03	7.177E 01	1.108E-02	7.667E 01	1.184E-02
4.041E 01	1.106E 01	1.180E 01	-3.641E 02	-7.531E 02	-5.736E 02	-1.795E 02	1.173E 03	7.195E 01	1.111E-02	7.678E 01	1.186E-02
4.072E 01	1.192E 01	1.232E 01	-3.639E 02	-7.898E 02	-5.906E 02	-1.991E 02	1.209E 03	7.752E 01	1.197E-02	8.013E 01	1.237E-02
4.121E 01	1.328E 01	2.500E 00	-3.772E 02	-8.499E 02	-6.200E 02	-2.299E 02	1.267E 03	8.640E 01	1.334E-02	1.626E 01	2.511E-03
4.150E 01	1.410E 01	2.495E 00	-3.938E 02	-8.869E 02	-6.389E 02	-2.480E 02	1.302E 03	9.172E 01	1.416E-02	1.623E 01	2.507E-03
4.246E 01	9.150E 00	2.480E 00	-4.315E 02	-1.016E 03	-7.033E 02	-3.129E 02	1.416E 03	5.952E 01	9.191E-03	1.613E 01	2.491E-03
4.269E 01	1.141E 01	2.476E 00	-4.384E 02	-1.048E 03	-7.185E 02	-3.300E 02	1.443E 03	7.425E 01	1.147E-02	1.611E 01	2.487E-03
4.270E 01	1.151E 01	2.476E 00	-4.387E 02	-1.050E 03	-7.192E 02	-3.307E 02	1.445E 03	7.488E 01	1.156E-02	1.611E 01	2.487E-03
4.277E 01	1.215E 01	2.475E 00	-4.409E 02	-1.059E 03	-7.233E 02	-3.354E 02	1.452E 03	7.901E 01	1.220E-02	1.610E 01	2.486E-03
4.431E 01	2.721E 01	2.456E 01	-4.526E 02	-1.241E 03	-8.039E 02	-4.374E 02	1.638E 03	1.770E 02	2.733E-02	1.598E 02	2.467E-02
4.480E 01	3.199E 01	3.158E 01	-4.478E 02	-1.289E 03	-8.226E 02	-4.664E 02	1.698E 03	2.081E 02	3.213E-02	2.054E 02	3.172E-02
4.549E 01	3.491E 01	4.141E 01	-4.348E 02	-1.354E 03	-8.469E 02	-5.072E 02	1.782E 03	2.270E 02	3.506E-02	2.694E 02	4.160E-02
4.619E 01	3.790E 01	3.913E 01	-3.987E 02	-1.444E 03	-8.720E 02	-5.718E 02	1.868E 03	2.465E 02	3.807E-02	2.545E 02	3.931E-02
4.620E 01	3.794E 01	3.910E 01	-3.973E 02	-1.445E 03	-8.723E 02	-5.730E 02	1.869E 03	2.468E 02	3.811E-02	2.543E 02	3.927E-02
4.625E 01	3.815E 01	3.894E 01	-3.947E 02	-1.453E 03	-8.741E 02	-5.791E 02	1.875E 03	2.481E 02	3.832E-02	2.533E 02	3.912E-02
4.626E 01	3.819E 01	3.891E 01	-3.941E 02	-1.455E 03	-8.744E 02	-5.804E 02	1.876E 03	2.484E 02	3.836E-02	2.531E 02	3.909E-02
4.731E 01	4.265E 01	3.551E 01	-3.290E 02	-1.663E 03	-9.124E 02	-7.509E 02	2.006E 03	2.774E 02	4.284E-02	2.310E 02	3.567E-02
4.811E 01	4.057E 01	3.292E 01	-2.596E 02	-1.849E 03	-9.418E 02	-9.070E 02	2.105E 03	2.639E 02	4.076E-02	2.141E 02	3.307E-02
4.873E 01	3.092E 01	3.092E 01	-1.713E 02	-1.993E 03	-9.647E 02	-1.028E 03	2.182E 03	2.012E 02	3.106E-02	2.012E 02	3.106E-02
5.018E 01	1.769E 01	1.769E 01	1.041E 01	-2.270E 03	-1.020E 03	-1.250E 03	2.363E 03	1.151E 02	1.777E-02	1.151E 02	1.777E-02
5.071E 01	1.285E 01	1.285E 01	5.259E 01	-2.340E 03	-1.040E 03	-1.300E 03	2.429E 03	8.358E 01	1.291E-02	8.358E 01	1.291E-02
5.212E 01	1.185E 01	1.185E 01	1.439E 02	-2.503E 03	-1.095E 03	-1.408E 03	2.607E 03	7.708E 01	1.190E-02	7.708E 01	1.190E-02
5.422E 01	7.075E 00	7.075E 00	2.481E 02	-2.716E 03	-1.179E 03	-1.537E 03	2.873E 03	4.602E 01	7.107E-03	4.602E 01	7.107E-03
5.472E 01	7.467E 00	7.467E 00	2.670E 02	-2.760E 03	-1.200E 03	-1.561E 03	2.937E 03	4.857E 01	7.500E-03	4.857E 01	7.500E-03
5.547E 01	6.651E 00	6.651E 00	2.943E 02	-2.826E 03	-1.231E 03	-1.595E 03	3.033E 03	4.326E 01	6.681E-03	4.326E 01	6.681E-03
5.576E 01	6.333E 00	6.333E 00	3.040E 02	-2.851E 03	-1.243E 03	-1.608E 03	3.070E 03	4.119E 01	6.361E-03	4.119E 01	6.361E-03
5.623E 01	3.287E 00	5.825E 00	3.707E 02	-2.887E 03	-1.259E 03	-1.628E 03	3.102E 03	2.138E 01	3.302E-03	3.789E 01	5.851E-03
5.765E 01	4.080E 00	4.080E 00	4.059E 02	-2.985E 03	-1.299E 03	-1.686E 03	3.210E 03	2.654E 01	4.098E-03	2.654E 01	4.098E-03
5.771E 01	5.900E 00	4.012E 00	4.071E 02	-2.988E 03	-1.300E 03	-1.688E 03	3.217E 03	3.838E 01	5.927E-03	2.610E 01	4.031E-03
5.785E 01	5.900E 00	3.841E 00	4.096E 02	-2.997E 03	-1.304E 03	-1.693E 03	3.234E 03	3.838E 01	5.927E-03	2.498E 01	3.858E-03
5.793E 01	3.743E 00	3.743E 00	4.112E 02	-3.002E 03	-1.306E 03	-1.696E 03	3.245E 03	2.435E 01	3.760E-03	2.435E 01	3.760E-03
5.821E 01	3.400E 00	3.400E 00	4.158E 02	-3.020E 03	-1.314E 03	-1.705E 03	3.280E 03	2.212E 01	3.415E-03	2.212E 01	3.415E-03
5.843E 01	3.186E 00	3.186E 00	4.190E 02	-3.033E 03	-1.320E 03	-1.712E 03	3.309E 03	2.072E 01	3.200E-03	2.072E 01	3.200E-03
5.916E 01	2.500E 00	2.500E 00	4.267E 02	-3.071E 03	-1.341E 03	-1.731E 03	3.402E 03	1.626E 01	2.511E-03	1.626E 01	2.511E-03
6.018E 01	4.475E 00	4.475E 00	4.348E 02	-3.128E 03	-1.369E 03	-1.759E 03	3.532E 03	2.911E 01	4.495E-03	2.911E 01	4.495E-03
6.219E 01	5.612E 00	5.612E 00	4.360E 02	-3.247E 03	-1.423E 03	-1.824E 03	3.790E 03	3.651E 01	5.638E-03	3.651E 01	5.638E-03
6.361E 01	5.987E 00	5.987E 00	4.360E 02	-3.326E 03	-1.456E 03	-1.869E 03	3.972E 03	3.895E 01	6.015E-03	3.895E 01	6.015E-03

XABS	P-IB	P-OB	POA	QOX	Q-IR	Q-OR	CAWALL	P-IP/PSO	P-IR/PTO	P-OR/PSO	P-OR/PTO
6.607E 01	8.512E 00	8.512E 00	4.360E 02	-3.452E 03	-1.495E 03	-1.957E 03	4.289E 03	5.536E 01	8.550E-03	5.536E 01	8.550E-03
6.645E 01	7.970E 00	8.897E 00	4.360E 02	-3.471E 03	-1.499E 03	-1.972E 03	4.337E 03	5.184E 01	8.006E-03	5.787E 01	8.937E-03
6.649E 01	7.970E 00	8.938E 00	4.360E 02	-3.473E 03	-1.500E 03	-1.974E 03	4.342E 03	5.184E 01	8.006E-03	5.814E 01	8.978E-03
6.669E 01	7.687E 00	9.142E 00	4.360E 02	-3.483E 03	-1.502E 03	-1.981E 03	4.368E 03	5.000E 01	7.721E-03	5.947E 01	9.184E-03
6.835E 01	5.335E 00	4.640E 00	5.110E 02	-3.568E 03	-1.526E 03	-2.042E 03	4.584E 03	3.470E 01	5.359E-03	3.018E 01	4.661E-03
6.902E 01	4.088E 00	5.010E 00	6.075E 02	-3.607E 03	-1.540E 03	-2.067E 03	4.665E 03	2.659E 01	4.107E-03	3.259E 01	5.033E-03
6.979E 01	2.655E 00	3.811E 00	7.138E 02	-3.656E 03	-1.558E 03	-2.098E 03	4.760E 03	1.727E 01	2.667E-03	2.479E 01	3.828E-03
7.051E 01	2.016E 00	2.690E 00	7.852E 02	-3.704E 03	-1.574E 03	-2.130E 03	4.848E 03	1.311E 01	2.025E-03	1.750E 01	2.702E-03
7.112E 01	1.475E 00	2.394E 00	8.311E 02	-3.742E 03	-1.587E 03	-2.156E 03	4.922E 03	9.594E 00	1.482E-03	1.557E 01	2.404E-03
7.250E 01	8.950E-01	1.723E 00	9.035E 02	-3.804E 03	-1.611E 03	-2.193E 03	5.088E 03	5.822E 00	8.990E-04	1.121E 01	1.731E-03
7.403E 01	7.546E-01	9.800E-01	9.540E 02	-3.852E 03	-1.632E 03	-2.220E 03	5.273E 03	4.908E 00	7.580E-04	6.375E 00	9.844E-04
7.493E 01	6.720E-01	2.300E-01	9.789E 02	-3.880E 03	-1.643E 03	-2.237E 03	5.372E 03	4.371E 00	6.751E-04	1.496E 00	2.310E-04
7.493E 01	6.717E-01	2.267E-01	9.793E 02	-3.880E 03	-1.643E 03	-2.237E 03	5.372E 03	4.369E 00	6.747E-04	1.474E 00	2.277E-04
7.626E 01	5.500E-01	0.000	9.922E 02	-3.924E 03	-1.655E 03	-2.269E 03	5.424E 03	3.578E 00	5.525E-04	0.000	0.000
7.911E 01	5.800E-01	0.000	1.015E 03	-3.945E 03	-1.676E 03	-2.269E 03	5.523E 03	3.773E 00	5.826E-04	0.000	0.000
8.301E 01	6.000E-01	0.000	1.040E 03	-3.962E 03	-1.693E 03	-2.269E 03	5.627E 03	3.903E 00	6.027E-04	0.000	0.000
8.582E 01	6.100E-01	0.000	1.053E 03	-3.975E 03	-1.706E 03	-2.269E 03	5.682E 03	3.968E 00	6.128E-04	0.000	0.000
8.868E 01	6.700E-01	0.000	1.069E 03	-3.999E 03	-1.730E 03	-2.269E 03	5.705E 03	4.358E 00	6.730E-04	0.000	0.000
8.868E 01	6.701E-01	0.000	1.069E 03	-3.999E 03	-1.730E 03	-2.269E 03	5.705E 03	4.359E 00	6.732E-04	0.000	0.000

READING = 0091 BLOCK = 134 TIME = 229.651 MACH 7.3 PT = 995.499 TT = 3086.3

X	DDRAG	CDRAG	CF	HC
4.040E 01	9.201E 01	9.201E 01	2.362E-03	3.311E-02
4.041E 01	1.369E-01	9.214E 01	2.362E-03	3.310E-02
4.072E 01	4.197E 00	9.634E 01	2.362E-03	3.322E-02
4.121E 01	6.718E 00	1.031E 02	2.401E-03	3.363E-02
4.150E 01	4.010E 00	1.071E 02	2.446E-03	3.408E-02
4.246E 01	1.283E 01	1.199E 02	2.544E-03	3.372E-02
4.269E 01	3.584E 00	1.235E 02	3.389E-03	2.155E-02
4.270E 01	1.611E-01	1.236E 02	2.815E-03	2.480E-02
4.277E 01	9.497E-01	1.246E 02	2.708E-03	2.619E-02
4.431E 01	1.940E 01	1.440E 02	2.913E-03	5.587E-02
4.480E 01	5.319E 00	1.493E 02	3.329E-03	5.270E-02
4.549E 01	7.184E 00	1.565E 02	3.464E-03	5.328E-02
4.619E 01	6.982E 00	1.635E 02	3.505E-03	5.221E-02
4.620E 01	9.681E-02	1.636E 02	3.505E-03	5.221E-02
4.625E 01	4.843E-01	1.641E 02	3.819E-03	4.903E-02
4.626E 01	9.875E-02	1.642E 02	3.376E-03	5.830E-02
4.731E 01	9.142E 00	1.733E 02	3.331E-03	5.689E-02
4.811E 01	6.440E 00	1.797E 02	3.353E-03	5.355E-02
4.873E 01	4.986E 00	1.847E 02	3.333E-03	4.986E-02
5.018E 01	1.241E 01	1.971E 02	3.208E-03	3.834E-02
5.071E 01	4.843E 00	2.020E 02	3.284E-03	3.056E-02
5.212E 01	1.207E 01	2.141E 02	3.084E-03	2.941E-02
5.422E 01	1.579E 01	2.298E 02	3.133E-03	1.970E-02
5.472E 01	3.470E 00	2.333E 02	2.977E-03	2.104E-02
5.547E 01	4.907E 00	2.382E 02	3.041E-03	1.882E-02
5.576E 01	1.885E 00	2.401E 02	3.017E-03	1.821E-02
5.623E 01	1.403E 00	2.415E 02	2.899E-03	1.392E-02
5.765E 01	4.104E 00	2.456E 02	2.859E-03	1.274E-02
5.771E 01	2.564E-01	2.459E 02	2.916E-03	1.439E-02
5.785E 01	6.575E-01	2.465E 02	3.082E-03	1.360E-02
5.793E 01	4.308E-01	2.470E 02	3.560E-03	1.024E-02
5.821E 01	1.666E 00	2.486E 02	3.565E-03	9.545E-03
5.843E 01	1.361E 00	2.500E 02	3.570E-03	9.097E-03
5.916E 01	4.436E 00	2.544E 02	3.611E-03	7.576E-03
6.018E 01	5.974E 00	2.604E 02	3.489E-03	1.149E-02
6.219E 01	1.101E 01	2.714E 02	3.459E-03	1.340E-02
6.361E 01	7.761E 00	2.792E 02	3.446E-03	1.402E-02
6.607E 01	1.249E 01	2.917E 02	3.502E-03	1.680E-02
6.645E 01	1.671E 00	2.933E 02	3.549E-03	1.626E-02
6.649E 01	1.782E-01	2.935E 02	3.604E-03	1.654E-02
6.669E 01	9.322E-01	2.944E 02	3.602E-03	1.650E-02
6.835E 01	7.427E 00	3.019E 02	3.509E-03	1.226E-02
6.902E 01	2.615E 00	3.045E 02	3.489E-03	1.155E-02
6.979E 01	2.787E 00	3.073E 02	3.435E-03	9.222E-03
7.051E 01	2.234E 00	3.095E 02	3.387E-03	7.394E-03
7.112E 01	1.654E 00	3.112E 02	3.359E-03	6.427E-03
7.250E 01	3.180E 00	3.143E 02	3.302E-03	4.821E-03
7.403E 01	2.792E 00	3.171E 02	3.239E-03	3.528E-03
7.493E 01	1.094E 00	3.182E 02	3.147E-03	2.126E-03
7.493E 01	1.414E-03	3.182E 02	3.146E-03	2.119E-03
7.626E 01	4.835E-01	3.187E 02	3.165E-03	2.475E-03
7.911E 01	9.893E-01	3.197E 02	3.156E-03	2.565E-03
8.301E 01	1.081E 00	3.208E 02	3.140E-03	2.614E-03
8.582E 01	5.479E-01	3.213E 02	3.127E-03	2.635E-03
8.868E 01	2.435E-01	3.216E 02	3.126E-03	2.820E-03
8.868E 01	0.000	3.216E 02	3.126E-03	2.820E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	734.	(LBF)
MEASURED THRUST	700.	(LBF)
CALCULATED SPECIFIC IMPULSE	2244.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2140.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.5066	
MEASURED THRUST COEFFICIENT	0.4832	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3533.	(LBF)
NET THRUST	864.	(LBF)
SPECIFIC IMPULSE	2642.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.5965	

MOMENTUM AND FORCES

INLET FRICTION DRAG	92.0	(LBF)
INLET MOMENTUM CHANGE	-456.2	(LBF)
COMBUSTOR FRICTION DRAG	201.3	(LBF)
COMBUSTOR STRUT DRAG	-12.34	(LBF)
COMBUSTOR MOMENTUM CHANGE	585.	(LBF)
NOZZLE FRICTION DRAG	28.26	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	605.	(LBF)
NOZZLE PRESSURE INTEGRAL	633.	(LBF)
EXTERNAL FRICTION DRAG	41.78	(LBF)
EXTERNAL PRESSURE INTEGRAL	-641.	(LBF)
TOTAL EXTERNAL DRAG	-682.	(LBF)
TOTAL STRUT DRAG	-12.34	(LBF)
CAVITY FORCE	-722.	(LBF)
CALCULATED LOAD CELL FORCE	-670.	(LBF)
MEASURED LOAD CELL FORCE	-704.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0, -150.5,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7070	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.591	(IN)
NOZZLE SHROUD TRAILING EDGE	74.931	(IN)
NOZZLE PLUG TRAILING EDGE	88.683	(IN)
STRUT LEADING EDGE	57.847	(IN)
STRUT TRAILING EDGE	66.447	(IN)
COMBUSTOR EXIT	66.447	(IN)

INLET

ANGLE OF ATTACK	3.000	(DEGREES)
MASS FLOW RATIO	0.9036	
ADDITIVE DRAG COEFFICIENT	0.0087	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0885	
DELTA PT2	0.0821	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.2428	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.0897	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8914	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9096	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.8903	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8468	
ENTHALPY AT P0 - SUPERSONIC	-29.56	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	3.15	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0238
EQUIVALENCE RATIO	0.718
COMBUSTOR EFFICIENCY	1.000
TOTAL PRESSURE RATIO	0.1046
COMBUSTOR EFFECTIVENESS	0.8661
INJECTOR DISCHARGE COEFFICIENTS	0.6056, 0.2642, 0.7478,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9744
NOZZLE COEFFICIENT - CT	0.8962
PROCESS EFFICIENCY	0.9680
KINETIC ENERGY EFFICIENCY	0.9443

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.692	B
1C	44.300	
2A	50.167	
2C	46.250	F
3A	55.457	
3B	57.642	
4	46.192	C

Reading 91

t = 235.95 sec.

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READING = 0091  BLOCK = 141  TIME = 235.951  MACH  7.3  PT = 995.499  TT = 3091.8                                        PAGE  1
                                                  RAMJET PERFORMANCE

                                              S U M M A R Y   R E P O R T

             P        T        H              GAMMA  MOLWT SONV  MACH   VEL    S      W/A      W     A/AC    PUPIM   G     IVAC  PHI  ETAC
WIND TUNNEL            1    0   6
 0.000   995.499 3092   697.5( 822) 1.2900 28.956 2617
 0.000     0.154  299   -57.2(  72) 1.3965 28.955  847 7.257 6145 1.817 0.05918 13.696 0.9036  2652  5.652 193.6
SPIKE TIP NS           2    0   7
 0.600    11.175 3092   697.5( 822) 1.2896 28.955 2616
 0.600    10.291 3035   660.2( 805) 1.2914 28.955 2594 0.359  931 2.125 0.05918 13.696 0.9036  2778  0.857 202.8
WIND TUNNEL            3    0   0
 0.000   995.499 3092   697.5( 822) 1.2900 28.956 2617
 0.000     0.166  306   -55.6(  73) 1.3968 28.955  857 7.167 6139 1.817 0.06258 14.482 0.9036  2802  5.970 193.5
SPIKE TIP NS           4    0   0
 0.600    11.175 3092   697.5( 822) 1.2896 28.955 2616
 0.600    10.173 3027   677.8( 803) 1.2917 28.955 2591 0.383  994 2.125 0.06258 14.482 0.9036  2802  0.966 193.5
INLET THROAT           5    0   2
40.400   242.013 2909   642.1( 768) 1.2957 28.955 2544
40.400    10.225 1336   199.1( 328) 1.3575 28.955 1765 2.667 4708 1.895 0.67502 13.696 0.0792  2212 49.389 161.5
INLET UPNRSK           6    0   3
40.400   242.013 2909   642.1( 768) 1.2957 28.955 2544
40.400     8.803 1285   185.6( 315) 1.3607 28.955 1732 2.759 4779 1.895 0.61366 13.696 0.0871  2231 45.576 162.9
INLET DNNRSK           7    0   4
40.400    89.233 2909   642.1( 768) 1.2957 28.955 2544
40.400    77.183 2814   613.6( 740) 1.2987 28.955 2505 0.477 1194 1.964 0.61366 13.696 0.0871  2231 11.386 162.9
COMBUSTOR         0    8    1   3
40.410   242.026 2909   642.0( 768) 1.2957 28.955 2544
40.410    10.223 1336   199.1( 328) 1.3576 28.955 1765 2.668 4708 1.895 0.67493 13.696 0.0792  2212 49.381 161.5
COMBUSTOR         0    9    2   3
40.717   242.005 2900   639.3( 765) 1.2960 28.955 2540
40.717    10.253 1332   198.1( 327) 1.3578 28.955 1763 2.666 4699 1.894 0.67740 13.696 0.0789  2208 49.465 161.2
COMBUSTOR         0   10    3   4
41.207   224.187 2885   634.9( 761) 1.2964 28.955 2534
41.207    10.548 1362   205.8( 335) 1.3560 28.955 1781
                                                           2.603 4634 1.898 0.67258 13.696 0.0795  2188 48.439 159.7
COMBUSTOR         0   11    4   4
41.500   205.047 2876   632.2( 758) 1.2967 28.955 2531
41.500    10.909 1401   216.1( 345) 1.3536 28.955 1805 2.528 4563 1.903 0.66563 13.696 0.0803  2167 47.203 158.2
COMBUSTOR         0   12    5   5
42.460   163.836 2845   622.8( 749) 1.2977 28.955 2518
42.460    11.279 1480   236.8( 366) 1.3491 28.955 1851 2.374 4395 1.915 0.62761 13.696 0.0852  2117 42.864 154.6
COMBUSTOR         0   13    6  21
42.692    92.367 2789   639.5( 818) 1.3026 25.818 2645
42.692     6.954 1473   226.7( 407) 1.3527 25.818 1959 2.320 4545 2.141 0.62777 13.827 0.0860  2107 44.343 152.4 0.29 0.07
COMBUSTOR         0   14    7  21
42.702   105.238 2692   639.4( 788) 1.3071 25.720 2608
42.702     7.004 1368   227.3( 377) 1.3594 25.720 1896 2.395 4541 2.122 0.62723 13.827 0.0861  2106 44.267 152.3 0.29 0.01
COMBUSTOR         0   15    8  21
42.767   107.994 2675   638.8( 783) 1.3078 25.705 2601
42.767     7.328 1365   231.1( 377) 1.3597 25.705 1895 2.383 4516 2.118 0.62573 13.827 0.0863  2103 43.918 152.1 0.29 0.00
COMBUSTOR         0   16    9   5
44.310    72.975 3265   625.7( 966) 1.2794 26.367 2806
44.310    25.927 2585   398.4( 744) 1.3027 26.369 2520 1.339 3373 2.194 0.57720 13.827 0.0935  2071 30.252 149.7 0.29 0.42
COMBUSTOR         0   17   10   4
44.800    68.924 3427   622.4(1017) 1.2709 26.559 2856
44.800    31.834 2894   440.0( 841) 1.2898 26.563 2643 1.143 3021 2.208 0.57112 13.827 0.0945  2069 26.810 149.6 0.29 0.54
COMBUSTOR         0   18   11   3
45.487    67.984 3494   617.8(1037) 1.2672 26.649 2874
45.487    38.064 3084   475.7( 902) 1.2821 26.654 2716 0.982 2666 2.212 0.56765 13.827 0.0951  2073 23.522 149.9 0.29 0.59
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ORIGINAL PAGE IS
OF POOR QUALITY

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMTM	G	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 4														
46.202	67.064	3602	611.3(1072)	1.2609	26.796	2903											
46.202	38.349	3201	470.5(938)	1.2760	26.603	2753	0.965	2655	2.218	0.55166	13.827	0.0979	2102	22.760	152.0	0.29	0.68
COMBUSTOR	0	20	13 9														
46.250	65.924	2948	633.0(985)	1.2969	22.827	2886											
46.250	38.368	2600	502.4(857)	1.3086	22.828	2722	0.939	2556	2.421	0.55722	14.006	0.0981	2077	22.134	148.3	0.69	0.17
COMBUSTOR	0	21	14 2														
46.260	65.911	2950	632.8(985)	1.2968	22.829	2886											
46.260	38.372	2601	502.3(857)	1.3085	22.829	2723	0.939	2556	2.421	0.55699	14.006	0.0982	2077	22.123	148.3	0.69	0.17
COMBUSTOR	0	22	15 4														
47.310	62.995	3097	617.9(1037)	1.2893	23.002	2938											
47.310	38.791	2773	495.1(917)	1.3003	23.003	2792	0.888	2479	2.436	0.51619	14.006	0.1059	2132	19.889	152.2	0.69	0.23
COMBUSTOR	0	23	16 4														
48.110	59.608	3311	604.5(1113)	1.2782	23.239	3009											
48.110	36.369	2968	472.0(984)	1.2903	23.241	2862	0.900	2575	2.456	0.47455	14.006	0.1152	2194	18.992	156.7	0.69	0.31
COMBUSTOR	0	24	17 4														
48.727	56.259	3629	594.2(1227)	1.2607	23.582	3106											
48.727	30.725	3193	420.5(1062)	1.2774	23.590	2932	1.005	2948	2.481	0.43299	14.006	0.1263	2277	19.837	162.6	0.69	0.43
COMBUSTOR	0	25	18 4														
50.177	53.269	3896	574.3(1323)	1.2438	23.912	3174											
50.177	17.555	3100	252.5(1021)	1.2761	23.935	2867	1.400	4012	2.497	0.35187	14.006	0.1554	2445	21.939	174.6	0.69	0.54
COMBUSTOR	0	26	19 4														
50.707	57.526	3670	569.2(1241)	1.2576	23.688	3113											
50.707	12.742	2647	172.3(858)	1.2955	23.700	2682	1.662	4457	2.478	0.32908	14.006	0.1662	2482	22.792	177.2	0.69	0.46
COMBUSTOR	0	27	20 5														
52.117	49.551	3981	557.6(1353)	1.2373	24.047	3191											
52.117	11.775	2965	147.1(968)	1.2792	24.080	2798	1.620	4532	2.505	0.28047	14.006	0.1950	2561	19.754	182.6	0.69	0.58
COMBUSTOR	0	28	21 5														
54.217	54.675	3711	540.9(1259)	1.2541	23.700	3125											
54.217	6.975	2364	22.6(758)	1.3041	23.715	2542	2.003	5093	2.490	0.23056	14.047	0.2379	2648	18.247	188.5	0.70	0.49
COMBUSTOR	0	29	22 4														
54.717	48.060	3912	537.8(1332)	1.2410	23.920	3176											
54.717	7.558	2649	37.8(857)	1.2910	23.948	2665	1.877	5002	2.511	0.22113	14.047	0.2480	2664	17.188	189.6	0.70	0.57
COMBUSTOR	0	30	23 3														
55.467	48.062	3895	533.2(1326)	1.2419	23.915	3171											
55.467	6.772	2571	11.6(828)	1.2939	23.942	2628	1.944	5108	2.509	0.20845	14.047	0.2631	2687	16.549	191.3	0.70	0.57
COMBUSTOR	0	31	24 3														
55.760	48.308	3881	531.4(1321)	1.2429	23.904	3167											
55.760	6.465	2529	0.9(814)	1.2955	23.930	2609	1.975	5152	2.508	0.20391	14.047	0.2690	2695	16.327	191.6	0.70	0.56
COMBUSTOR	0	32	25 3														
56.227	44.207	3894	528.8(1325)	1.2414	23.925	3170											
56.227	4.631	2403	-53.6(768)	1.2997	23.953	2546	2.120	5398	2.516	0.16126	14.047	0.3401	2760	13.529	196.5	0.70	0.57
COMBUSTOR	0	33	26 4														
57.652	43.296	3927	522.0(1337)	1.2389	23.978	3176											
57.652	4.158	2382	-82.2(759)	1.2998	24.010	2532	2.171	5498	2.518	0.14910	14.047	0.3678	2792	12.741	198.8	0.70	0.59
COMBUSTOR	0	34	27 5														
57.707	36.295	4190	521.7(1433)	1.2186	24.268	3234											
57.707	5.019	2824	-42.1(914)	1.2798	24.339	2717	1.955	5312	2.544	0.14868	14.047	0.3689	2793	12.273	198.8	0.70	0.69
COMBUSTOR	0	35	28 3														
57.847	36.405	4180	521.1(1430)	1.2194	24.258	3232											
57.847	4.930	2801	-46.1(906)	1.2808	24.327	2708	1.967	5327	2.544	0.14759	14.047	0.3716	2795	12.219	199.0	0.70	0.68
COMBUSTOR	0	36	29 21														
57.927	24.779	4804	520.7(1659)	1.1618	24.982	3333											
57.927	3.807	3619	-102.5(1193)	1.2267	25.379	2949	1.894	5584	2.590	0.14924	14.047	0.3675	2796	12.951	199.1	0.70	1.00
COMBUSTOR	0	37	30 21														
58.207	24.021	4799	519.5(1658)	1.1615	24.980	3331											
58.207	3.450	3573	-122.2(1175)	1.2293	25.383	2933	1.932	5667	2.592	0.14875	14.047	0.3687	2800	13.099	199.3	0.70	1.00

C.5

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOPTK	C	IVAC	PHI	ETAC
COMBUSTOR	0	38	31 21														
58.433	23.443	4796	518.6(1656)	1.1613	24.979	3329											
58.433	3.218	3541	-135.4(1164)	1.2311	25.386	2922	1.958	5720	2.594	0.14844	14.047	0.3695	2802	13.196	199.5	0.70	1.00
COMBUSTOR	0	39	32 21														
59.157	20.793	4781	515.9(1651)	1.1602	24.970	3323											
59.157	2.475	3444	-175.8(1126)	1.2362	25.393	2887	2.038	5883	2.603	0.14614	14.047	0.3753	2806	13.361	199.8	0.70	1.00
COMBUSTOR	0	40	33 21														
60.177	26.665	4798	511.9(1657)	1.1633	25.000	3332											
60.177	4.725	3698	-68.7(1223)	1.2225	25.372	2976	1.811	5390	2.582	0.14521	14.047	0.3777	2810	12.163	200.1	0.70	1.00
COMBUSTOR	0	41	34 21														
62.187	27.912	4791	503.5(1654)	1.1645	25.015	3330											
62.187	5.337	3734	-53.2(1237)	1.2209	25.368	2989	1.766	5278	2.577	0.15026	14.047	0.3650	2803	12.324	199.6	0.70	1.00
COMBUSTOR	0	42	35 21														
63.607	28.820	4786	497.7(1651)	1.1653	25.025	3329											
63.607	5.875	3767	-39.0(1250)	1.2193	25.365	3000	1.727	5183	2.573	0.15433	14.047	0.3553	2797	12.430	199.1	0.70	1.00
COMBUSTOR	0	43	36 200														
66.071	27.535	4767	487.4(1644)	1.1656	25.033	3322											
66.071	8.441	4018	77.3(1347)	1.2033	25.320	3081	1.470	4530	2.575	0.14629	14.047	0.3749	2788	10.299	198.5	0.70	1.00
COMBUSTOR	0	44	37 200														
66.447	25.546	4759	485.7(1641)	1.1649	25.027	3319											
66.447	8.091	4035	86.4(1354)	1.2014	25.314	3086	1.448	4470	2.580	0.13600	14.047	0.4032	2767	9.447	198.4	0.70	1.00
COMBUSTOR REGEN	45	38	3														
66.447	25.546	5003	680.9(1742)	1.1518	24.770	3401											
66.447	7.521	4289	229.0(1454)	1.1788	25.204	3158	1.506	4755	2.620	0.13600	14.047	0.4032	2853	10.051	203.1	0.70	1.00
NOZZLE AE	46	39	5														
88.683	25.546	4759	485.7(1545)	1.1649	25.027	3319											
88.683	0.563	2385	-576.7(739)	1.2837	25.417	2447	2.960	7291	2.580	0.02831	14.047	1.9371	3463	3.208	246.5	0.70	1.00
NOZZLE PO	47	40	5														
88.683	25.546	4759	485.7(1545)	1.1649	25.027	3319											
88.683	0.154	1772	-786.5(530)	1.3098	25.417	2131	3.745	7979	2.580	0.01138	14.047	4.8181	3673	1.411	261.5	0.70	1.00
NOZZLE AE REGEN	48	41	5														
88.683	25.546	5003	680.9(1742)	1.1518	24.770	3401											
88.683	0.622	2722	-455.0(859)	1.2706	25.416	2601	2.898	7539	2.620	0.02831	14.047	1.9371	3600	3.317	256.3	0.70	1.00
NOZZLE PO REGEN	49	42	5														
88.683	25.546	5003	680.9(1742)	1.1518	24.770	3401											
88.683	0.154	1997	-711.2(605)	1.2993	25.417	2253	3.705	8346	2.620	0.01057	14.047	5.1896	3848	1.371	274.0	0.70	1.00
FICTIVE COMBUSTR	67	60	0														
66.447	242.013	4915	485.7(1700)	1.1893	25.206	3395											
66.447	0.154	1003	-1028.0(288)	1.3561	25.417	1631	5.336	8703	2.402	0.02194	14.047	2.4998	3898	2.967	277.5	0.70	1.00
FICTIVE NOZZLE	68	61	0														
88.683	21.773	4696	450.1(1616)	1.1663	25.054	3297											
88.683	0.595	2449	-553.9(762)	1.2812	25.417	2477	2.861	7088	2.585	0.02831	14.047	1.9371	3390	3.118	241.3	0.70	1.00

XABS	P-IB	P-OB	PPA	QOX	Q-IP	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	6.900E-01	0.000	-2.699E-01	0.000	0.000	0.000	2.470E-02	4.489E 00	6.931E-04	0.000	0.000
1.836E 01	6.900E-01	0.000	-2.296E 01	0.000	0.000	0.000	1.634E 02	4.489E 00	6.931E-04	0.000	0.000
3.070E 01	1.520E 00	0.000	-1.125E 02	0.000	0.000	0.000	5.053E 02	9.889E 00	1.527E-03	0.000	0.000
3.508E 01	1.960E 00	0.000	-2.253E 02	0.000	0.000	0.000	6.804E 02	1.275E 01	1.969E-03	0.000	0.000
3.555E 01	2.230E 00	0.000	-2.444E 02	0.000	0.000	0.000	7.013E 02	1.451E 01	2.240E-03	0.000	0.000
3.606E 01	2.520E 00	0.000	-2.685E 02	-4.312E 02	-4.312E 02	0.000	7.246E 02	1.640E 01	2.531E-03	0.000	0.000
3.648E 01	2.244E 00	0.000	-2.889E 02	-4.416E 02	-4.416E 02	0.000	7.443E 02	1.460E 01	2.255E-03	0.000	0.000
3.658E 01	2.324E 00	3.193E 00	-3.270E 02	-4.443E 02	-4.443E 02	0.000	7.492E 02	1.512E 01	2.334E-03	2.076E 01	3.208E-03
3.659E 01	2.328E 00	3.221E 00	-3.270E 02	-4.445E 02	-4.445E 02	0.000	7.495E 02	1.515E 01	2.339E-03	2.095E 01	3.235E-03
3.701E 01	2.645E 00	5.134E 00	-3.285E 02	-4.554E 02	-4.554E 02	0.000	7.930E 02	1.721E 01	2.657E-03	3.341E 01	5.158E-03
3.726E 01	2.465E 00	6.262E 00	-3.266E 02	-4.621E 02	-4.621E 02	0.000	8.189E 02	1.603E 01	2.476E-03	4.074E 01	6.291E-03
3.803E 01	1.900E 00	8.847E 00	-3.037E 02	-4.842E 02	-4.842E 02	0.000	9.021E 02	1.236E 01	1.909E-03	5.756E 01	8.887E-03
3.872E 01	7.501E 00	1.114E 01	-3.057E 02	-5.759E 02	-5.068E 02	-6.909E 01	9.786E 02	4.880E 01	7.535E-03	7.250E 01	1.119E-02
3.875E 01	7.770E 00	1.103E 01	-3.066E 02	-5.792E 02	-5.080E 02	-7.120E 01	9.824E 02	5.055E 01	7.805E-03	7.179E 01	1.108E-02
3.901E 01	9.890E 00	1.018E 01	-3.159E 02	-6.056E 02	-5.178E 02	-8.779E 01	1.012E 03	6.435E 01	9.935E-03	6.622E 01	1.022E-02
3.950E 01	1.392E 01	8.563E 00	-3.440E 02	-6.572E 02	-5.383E 02	-1.189E 02	1.068E 03	9.056E 01	1.398E-02	5.571E 01	8.601E-03
3.974E 01	1.202E 01	7.781E 00	-3.567E 02	-6.832E 02	-5.492E 02	-1.340E 02	1.095E 03	7.822E 01	1.208E-02	5.063E 01	7.816E-03
4.000E 01	9.916E 00	9.841E 00	-3.630E 02	-7.128E 02	-5.622E 02	-1.506E 02	1.126E 03	6.451E 01	9.960E-03	6.403E 01	9.886E-03
4.021E 01	1.049E 01	1.146E 01	-3.645E 02	-7.366E 02	-5.730E 02	-1.636E 02	1.150E 03	6.825E 01	1.054E-02	7.456E 01	1.151E-02
4.040E 01	1.102E 01	1.177E 01	-3.644E 02	-7.592E 02	-5.834E 02	-1.758E 02	1.172E 03	7.173E 01	1.107E-02	7.658E 01	1.182E-02
4.041E 01	1.105E 01	1.179E 01	-3.643E 02	-7.603E 02	-5.839E 02	-1.764E 02	1.173E 03	7.191E 01	1.110E-02	7.666E 01	1.184E-02
4.072E 01	1.190E 01	1.227E 01	-3.642E 02	-7.969E 02	-6.012E 02	-1.957E 02	1.209E 03	7.745E 01	1.196E-02	7.986E 01	1.233E-02
4.121E 01	1.326E 01	2.512E 00	-3.775E 02	-8.569E 02	-6.310E 02	-2.260E 02	1.267E 03	8.629E 01	1.332E-02	1.635E 01	2.524E-03
4.150E 01	1.407E 01	2.515E 00	-3.940E 02	-8.938E 02	-6.501E 02	-2.437E 02	1.302E 03	9.157E 01	1.414E-02	1.636E 01	2.526E-03
4.246E 01	9.075E 00	2.523E 00	-4.313E 02	-1.023E 03	-7.151E 02	-3.082E 02	1.416E 03	5.904E 01	9.116E-03	1.641E 01	2.534E-03
4.269E 01	1.138E 01	2.524E 00	-4.380E 02	-1.056E 03	-7.305E 02	-3.255E 02	1.443E 03	7.406E 01	1.144E-02	1.642E 01	2.536E-03
4.270E 01	1.148E 01	2.524E 00	-4.384E 02	-1.057E 03	-7.311E 02	-3.262E 02	1.445E 03	7.471E 01	1.154E-02	1.642E 01	2.536E-03
4.277E 01	1.213E 01	2.525E 00	-4.406E 02	-1.066E 03	-7.353E 02	-3.310E 02	1.452E 03	7.892E 01	1.219E-02	1.643E 01	2.536E-03
4.431E 01	2.749E 01	2.437E 01	-4.536E 02	-1.247E 03	-8.154E 02	-4.319E 02	1.638E 03	1.788E 02	2.761E-02	1.585E 02	2.448E-02
4.480E 01	3.236E 01	3.131E 01	-4.499E 02	-1.293E 03	-8.337E 02	-4.597E 02	1.698E 03	2.106E 02	3.251E-02	2.037E 02	3.145E-02
4.549E 01	3.510E 01	4.103E 01	-4.385E 02	-1.356E 03	-8.572E 02	-4.988E 02	1.782E 03	2.283E 02	3.525E-02	2.670E 02	4.122E-02
4.620E 01	3.794E 01	3.876E 01	-4.024E 02	-1.446E 03	-8.819E 02	-5.638E 02	1.869E 03	2.468E 02	3.811E-02	2.522E 02	3.893E-02
4.625E 01	3.813E 01	3.860E 01	-3.998E 02	-1.454E 03	-8.836E 02	-5.699E 02	1.875E 03	2.481E 02	3.830E-02	2.512E 02	3.878E-02
4.626E 01	3.817E 01	3.857E 01	-3.993E 02	-1.455E 03	-8.840E 02	-5.712E 02	1.876E 03	2.483E 02	3.834E-02	2.510E 02	3.875E-02
4.731E 01	4.235E 01	3.523E 01	-3.352E 02	-1.665E 03	-9.209E 02	-7.436E 02	2.006E 03	2.755E 02	4.254E-02	2.292E 02	3.539E-02
4.811E 01	4.005E 01	3.269E 01	-2.662E 02	-1.852E 03	-9.496E 02	-9.021E 02	2.105E 03	2.606E 02	4.023E-02	2.127E 02	3.284E-02
4.873E 01	3.072E 01	3.072E 01	-1.784E 02	-1.997E 03	-9.721E 02	-1.025E 03	2.182E 03	1.999E 02	3.086E-02	1.999E 02	3.086E-02
5.018E 01	1.756E 01	1.756E 01	2.043E 00	-2.276E 03	-1.026E 03	-1.250E 03	2.363E 03	1.142E 02	1.763E-02	1.142E 02	1.763E-02
5.071E 01	1.274E 01	1.274E 01	4.389E 01	-2.347E 03	-1.046E 03	-1.301E 03	2.429E 03	8.290E 01	1.280E-02	8.290E 01	1.280E-02
5.212E 01	1.177E 01	1.177E 01	1.345E 02	-2.509E 03	-1.100E 03	-1.409E 03	2.607E 03	7.661E 01	1.183E-02	7.661E 01	1.183E-02
5.422E 01	6.975E 00	6.975E 00	2.377E 02	-2.720E 03	-1.184E 03	-1.537E 03	2.873E 03	4.538E 01	7.007E-03	4.538E 01	7.007E-03
5.472E 01	7.558E 00	7.558E 00	2.566E 02	-2.764E 03	-1.204E 03	-1.561E 03	2.937E 03	4.918E 01	7.592E-03	4.918E 01	7.592E-03
5.547E 01	6.772E 00	6.772E 00	2.844E 02	-2.829E 03	-1.235E 03	-1.595E 03	3.033E 03	4.406E 01	6.803E-03	4.406E 01	6.803E-03
5.576E 01	6.465E 00	6.465E 00	2.943E 02	-2.854E 03	-1.247E 03	-1.608E 03	3.070E 03	4.206E 01	6.494E-03	4.206E 01	6.494E-03
5.623E 01	3.287E 00	5.975E 00	3.613E 02	-2.891E 03	-1.263E 03	-1.628E 03	3.102E 03	2.139E 01	3.302E-03	3.887E 01	6.002E-03
5.765E 01	4.158E 00	4.158E 00	3.973E 02	-2.967E 03	-1.302E 03	-1.685E 03	3.210E 03	2.705E 01	4.177E-03	2.705E 01	4.177E-03
5.771E 01	5.950E 00	4.088E 00	3.985E 02	-2.990E 03	-1.303E 03	-1.687E 03	3.217E 03	3.871E 01	5.977E-03	2.659E 01	4.106E-03
5.785E 01	5.950E 00	3.909E 00	4.011E 02	-2.999E 03	-1.307E 03	-1.692E 03	3.234E 03	3.871E 01	5.977E-03	2.543E 01	3.927E-03
5.793E 01	3.807E 00	3.807E 00	4.027E 02	-3.004E 03	-1.309E 03	-1.695E 03	3.245E 03	2.477E 01	3.824E-03	2.477E 01	3.824E-03
5.821E 01	3.450E 00	3.450E 00	4.074E 02	-3.021E 03	-1.317E 03	-1.705E 03	3.280E 03	2.245E 01	3.466E-03	2.245E 01	3.466E-03
5.843E 01	3.218E 00	3.218E 00	4.106E 02	-3.034E 03	-1.323E 03	-1.711E 03	3.309E 03	2.094E 01	3.233E-03	2.094E 01	3.233E-03
5.916E 01	2.475E 00	2.475E 00	4.184E 02	-3.073E 03	-1.343E 03	-1.730E 03	3.402E 03	1.610E 01	2.486E-03	1.610E 01	2.486E-03
6.018E 01	4.725E 00	4.725E 00	4.267E 02	-3.129E 03	-1.371E 03	-1.758E 03	3.532E 03	3.074E 01	4.746E-03	3.074E 01	4.746E-03
6.219E 01	5.337E 00	5.337E 00	4.279E 02	-3.246E 03	-1.426E 03	-1.821E 03	3.790E 03	3.473E 01	5.362E-03	3.473E 01	5.362E-03
6.361E 01	5.875E 00	5.875E 00	4.279E 02	-3.327E 03	-1.464E 03	-1.863E 03	3.972E 03	3.822E 01	5.902E-03	3.822E 01	5.902E-03
6.607E 01	8.441E 00	8.441E 00	4.279E 02	-3.473E 03	-1.525E 03	-1.948E 03	4.289E 03	5.492E 01	8.479E-03	5.492E 01	8.479E-03

XAB	P-IB	P-OB	PPA	QOX	Q-IB	Q-OB	CA-ALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.645E 01	7.350E 00	6.833E 00	4.279E 02	-3.496E 03	-1.533E 03	-1.963E 03	4.337E 03	4.782E 01	7.383E-03	5.747E 01	8.872E-03
6.649E 01	7.350E 00	8.674E 00	4.279E 02	-3.499E 03	-1.534E 03	-1.965E 03	4.342E 03	4.782E 01	7.383E-03	5.774E 01	8.914E-03
6.669E 01	7.130E 00	9.082E 00	4.279E 02	-3.511E 03	-1.539E 03	-1.972E 03	4.368E 03	4.639E 01	7.162E-03	5.909E 01	9.124E-03
6.835E 01	5.300E 00	4.095E 00	4.996E 02	-3.610E 03	-1.578E 03	-2.032E 03	4.584E 03	3.446E 01	5.324E-03	2.664E 01	4.114E-03
6.902E 01	4.083E 00	5.002E 00	5.931E 02	-3.650E 03	-1.594E 03	-2.056E 03	4.665E 03	2.657E 01	4.102E-03	3.255E 01	5.025E-03
6.970E 01	2.685E 00	3.828E 00	6.996E 02	-3.700E 03	-1.613E 03	-2.087E 03	4.760E 03	1.747E 01	2.697E-03	2.491E 01	3.845E-03
7.051E 01	2.033E 00	2.730E 00	7.717E 02	-3.746E 03	-1.629E 03	-2.119E 03	4.848E 03	1.322E 01	2.042E-03	1.776E 01	2.742E-03
7.112E 01	1.480E 00	2.428E 00	8.181E 02	-3.785E 03	-1.640E 03	-2.145E 03	4.922E 03	9.624E 00	1.487E-03	1.580E 01	2.439E-03
7.250E 01	8.800E-01	1.746E 00	8.909E 02	-3.846E 03	-1.663E 03	-2.182E 03	5.088E 03	5.725E 00	8.840E-04	1.136E 01	1.754E-03
7.403E 01	7.457E-01	9.900E-01	9.414E 02	-3.893E 03	-1.684E 03	-2.209E 03	5.273E 03	4.852E 00	7.491E-04	6.441E 00	9.945E-04
7.493E 01	6.667E-01	2.300E-01	9.663E 02	-3.920E 03	-1.693E 03	-2.227E 03	5.372E 03	4.338E 00	6.697E-04	1.496E 00	2.310E-04
7.493E 01	6.664E-01	2.266E-01	9.668E 02	-3.920E 03	-1.694E 03	-2.227E 03	5.372E 03	4.336E 00	6.694E-04	1.474E 00	2.276E-04
7.626E 01	5.500E-01	0.000	9.796E 02	-3.964E 03	-1.706E 03	-2.259E 03	5.424E 03	3.578E 00	5.525E-04	0.000	0.000
7.911E 01	5.900E-01	0.000	1.002E 03	-3.940E 03	-1.726E 03	-2.214E 03	5.523E 03	3.839E 00	5.927E-04	0.000	0.000
8.301E 01	6.350E-01	0.000	1.029E 03	-3.957E 03	-1.744E 03	-2.214E 03	5.627E 03	4.131E 00	6.379E-04	0.000	0.000
8.582E 01	6.200E-01	0.000	1.043E 03	-3.972E 03	-1.758E 03	-2.214E 03	5.682E 03	4.034E 00	6.228E-04	0.000	0.000
8.868E 01	7.100E-01	0.000	1.059E 03	-3.997E 03	-1.783E 03	-2.214E 03	5.705E 03	4.619E 00	7.132E-04	0.000	0.000
8.868E 01	7.102E-01	0.000	1.059E 03	-3.997E 03	-1.783E 03	-2.214E 03	5.705E 03	4.621E 00	7.134E-04	0.000	0.000

READING = 0091 BLOCK = 141 TIME = 235.951 MACH 7.3 PI = 995.499 TI = 3091.8

X	DDRAG	CDRAG	CF	HC
4.040E 01	9.198E 01	9.198E 01	2.362E-03	3.307E-02
4.041E 01	1.369E-01	9.212E 01	2.362E-03	3.306E-02
4.072E 01	4.195E 00	9.632E 01	2.362E-03	3.318E-02
4.121E 01	6.715E 00	1.030E 02	2.401E-03	3.359E-02
4.150E 01	4.009E 00	1.070E 02	2.446E-03	3.404E-02
4.246E 01	1.282E 01	1.199E 02	2.543E-03	3.366E-02
4.269E 01	3.587E 00	1.234E 02	3.398E-03	2.156E-02
4.270E 01	1.614E-01	1.236E 02	2.819E-03	2.483E-02
4.277E 01	9.504E-01	1.246E 02	2.711E-03	2.625E-02
4.431E 01	1.940E 01	1.440E 02	2.918E-03	5.589E-02
4.480E 01	5.313E 00	1.493E 02	3.333E-03	5.271E-02
4.549E 01	7.170E 00	1.564E 02	3.466E-03	5.321E-02
4.620E 01	7.022E 00	1.635E 02	3.463E-03	5.248E-02
4.625E 01	4.818E-01	1.639E 02	3.838E-03	4.832E-02
4.626E 01	1.051E-01	1.641E 02	3.838E-03	4.832E-02
4.731E 01	9.756E 00	1.738E 02	3.333E-03	5.636E-02
4.811E 01	6.442E 00	1.803E 02	3.352E-03	5.307E-02
4.873E 01	4.984E 00	1.852E 02	3.335E-03	4.938E-02
5.018E 01	1.238E 01	1.976E 02	3.209E-03	3.794E-02
5.071E 01	4.828E 00	2.024E 02	3.284E-03	3.023E-02
5.212E 01	1.202E 01	2.145E 02	3.083E-03	2.915E-02
5.422E 01	1.573E 01	2.302E 02	3.134E-03	1.940E-02
5.472E 01	3.448E 00	2.336E 02	2.974E-03	2.112E-02
5.547E 01	4.875E 00	2.385E 02	3.059E-03	1.886E-02
5.576E 01	1.880E 00	2.404E 02	3.040E-03	1.826E-02
5.623E 01	1.402E 00	2.418E 02	2.925E-03	1.391E-02
5.765E 01	4.106E 00	2.459E 02	2.882E-03	1.278E-02
5.771E 01	2.565E-01	2.462E 02	2.940E-03	1.435E-02
5.785E 01	6.574E-01	2.468E 02	3.101E-03	1.358E-02
5.793E 01	4.270E-01	2.472E 02	3.529E-03	1.036E-02
5.821E 01	1.641E 00	2.489E 02	3.533E-03	9.643E-03
5.843E 01	1.340E 00	2.502E 02	3.538E-03	9.162E-03
5.916E 01	4.378E 00	2.546E 02	3.580E-03	7.519E-03
6.018E 01	5.871E 00	2.605E 02	3.459E-03	1.191E-02
6.219E 01	1.088E 01	2.714E 02	3.436E-03	1.297E-02
6.361E 01	7.732E 00	2.791E 02	3.422E-03	1.365E-02
6.607E 01	1.240E 01	2.915E 02	3.481E-03	1.671E-02
6.645E 01	1.668E 00	2.932E 02	3.523E-03	1.594E-02
6.649E 01	1.789E-01	2.933E 02	3.572E-03	1.620E-02
6.669E 01	9.346E-01	2.943E 02	3.571E-03	1.619E-02
6.835E 01	7.376E 00	3.017E 02	3.476E-03	1.179E-02
6.902E 01	2.595E 00	3.042E 02	3.464E-03	1.153E-02
6.979E 01	2.797E 00	3.070E 02	3.412E-03	9.250E-03
7.051E 01	2.249E 00	3.093E 02	3.363E-03	7.441E-03
7.112E 01	1.666E 00	3.110E 02	3.335E-03	6.461E-03
7.250E 01	3.196E 00	3.142E 02	3.277E-03	4.822E-03
7.403E 01	2.798E 00	3.170E 02	3.213E-03	3.522E-03
7.493E 01	1.093E 00	3.180E 02	3.119E-03	2.111E-03
7.493E 01	1.409E-03	3.180E 02	3.118E-03	2.104E-03
7.626E 01	4.827E-01	3.185E 02	3.139E-03	2.469E-03
7.911E 01	9.951E-01	3.195E 02	3.132E-03	2.593E-03
8.301E 01	1.107E 00	3.206E 02	3.121E-03	2.725E-03
8.582E 01	5.815E-01	3.212E 02	3.104E-03	2.662E-03
8.868E 01	2.495E-01	3.215E 02	3.108E-03	2.941E-03
8.868E 01	0.000	3.215E 02	3.108E-03	2.942E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	721.	(LBF)
MEASURED THRUST	710.	(LBF)
CALCULATED SPECIFIC IMPULSE	2278.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2242.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.4984	
MEASURED THRUST COEFFICIENT	0.4905	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3524.	(LBF)
NET THRUST	856.	(LBF)
SPECIFIC IMPULSE	2702.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.5913	

MOMENTUM AND FORCES

INLET FRICTION DRAG	92.0	(LBF)
INLET MOMENTUM CHANGE	-456.4	(LBF)
COMBUSTOR FRICTION DRAG	201.2	(LBF)
COMBUSTOR STRUT DRAG	-11.61	(LBF)
COMBUSTOR MOMENTUM CHANGE	575.	(LBF)
NOZZLE FRICTION DRAG	28.30	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	602.	(LBF)
NOZZLE PRESSURE INTEGRAL	631.	(LBF)
EXTERNAL FRICTION DRAG	41.63	(LBF)
EXTERNAL PRESSURE INTEGRAL	-640.	(LBF)
TOTAL EXTERNAL DRAG	-682.	(LBF)
TOTAL STRUT DRAG	-11.61	(LBF)
CAVITY FORCE	-769.	(LBF)
CALCULATED LOAD CELL FORCE	-729.	(LBF)
MEASURED LOAD CELL FORCE	-739.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, -152.8,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7070	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.591	(IN)
NOZZLE SHROUD TRAILING EDGE	74.931	(IN)
NOZZLE PLUG TRAILING EDGE	88.683	(IN)
STRUT LEADING EDGE	57.847	(IN)
STRUT TRAILING EDGE	66.447	(IN)
COMBUSTOR EXIT	66.447	(IN)

INLET

ANGLE OF ATTACK	3.000	(DEGREES)
MASS FLOW RATIO	0.9036	
ADDITIVE DRAG COEFFICIENT	0.0087	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.0864	
DELTA PT2	0.0820	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.2431	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.0896	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8916	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9097	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.8898	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8463	
ENTHALPY AT PO - SUPERSONIC	-29.45	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	3.36	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0231
EQUIVALENCE RATIO	0.696
COMBUSTOR EFFICIENCY	1.000
TOTAL PRESSURE RATIO	0.1056
COMBUSTOR EFFECTIVENESS	0.8661
INJECTOR DISCHARGE COEFFICIENTS	0.6084, 0.7598,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9789
NOZZLE COEFFICIENT - CT	0.9020
PROCESS EFFICIENCY	0.9808
KINETIC ENERGY EFFICIENCY	0.9542

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.692	B
1C	44.300	
2A	50.167	
2C	46.250	E
3A	55.457	
3B	57.642	
4	46.192	

Reading 92

t = 186.87 sec.

READING = 0092 BLOCK = 76 TIME = 184.667 MACH 7.4 PT = 993.249 TT = 2053.1 12/23/74

RAMJET PERFORMANCE

S U M M A R Y R E P O R T

	P	T	M	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	HUPTH	G	IVAC	PHI	ETAC
WIND TUNNEL		1	0 5														
0.000	993.249	2053	394.3(523)	1.3247	28.847	2165											
0.000	0.157	184	-85.6(44)	1.3907	28.847	664	7.383	4900	1.698	0.07816	19.869	0.9926	3066	5.952	154.3		
SPIKE TIP NS		2	0 4														
0.600	11.100	2053	394.3(524)	1.3247	28.847	2165											
0.600	10.047	2003	380.4(510)	1.3265	28.847	2140	0.390	835	2.007	0.07816	19.869	0.9926	3070	1.014	154.5		
WIND TUNNEL		3	0 8														
0.000	993.249	2053	394.3(523)	1.3247	28.847	2165											
0.000	0.157	184	-85.5(44)	1.3907	28.847	664	7.381	4900	1.698	0.07827	19.898	0.9926	3071	5.961	154.3		
SPIKE TIP NS		4	0 0														
0.600	11.100	2053	394.3(524)	1.3247	28.847	2165											
0.600	10.044	2003	380.4(510)	1.3265	28.847	2140	0.391	836	2.007	0.07827	19.898	0.9926	3071	1.017	154.3		
INLET THROAT		5	0 3														
40.400	318.108	2020	385.0(514)	1.3259	28.847	2148											
40.400	11.004	831	71.7(201)	1.3888	28.847	1410	2.807	3960	1.772	0.97870	19.869	0.0793	2669	60.224	134.3		
INLET UPNRSK		6	0 3														
40.400	318.108	2020	385.0(514)	1.3259	28.847	2148											
40.400	9.462	797	63.2(193)	1.3904	28.847	1382	2.904	4013	1.772	0.88973	19.869	0.0872	2669	55.483	135.4		
INLET DNNRSK		7	0 4														
40.400	107.384	2020	385.0(514)	1.3259	28.847	2148											
40.400	92.744	1948	365.0(494)	1.3286	28.847	2112	0.474	1001	1.847	0.88973	19.869	0.0872	2669	13.843	135.4		
COMBUSTOR	0	8	1 3														
40.410	317.795	2020	385.0(514)	1.3259	28.847	2148											
40.410	11.008	831	71.7(201)	1.3887	28.847	1411	2.807	3959	1.772	0.97857	19.869	0.0793	2668	60.208	134.3		
COMBUSTOR	0	9	2 3														
40.715	310.329	2017	384.3(513)	1.3260	28.847	2147											
40.715	11.215	840	73.9(203)	1.3883	28.847	1418	2.780	3941	1.773	0.98211	19.869	0.0790	2661	60.150	133.9		
COMBUSTOR	0	10	3 4														
41.205	284.144	2013	383.2(512)	1.3261	28.847	2145											
41.205	11.670	869	80.9(210)	1.3868	28.847	1441	2.699	3889	1.779	0.97522	19.869	0.0795	2639	58.936	132.8		
COMBUSTOR	0	11	4 4														
41.500	260.361	2011	382.5(512)	1.3262	28.847	2144											
41.500	12.093	898	88.1(217)	1.3853	28.847	1464	2.621	3838	1.784	0.96507	19.869	0.0804	2619	57.559	131.6		
COMBUSTOR	0	12	5 5														
42.460	213.716	2002	380.1(509)	1.3266	28.847	2140											
42.460	12.426	951	101.3(231)	1.3823	28.847	1505	2.481	3735	1.797	0.91111	19.869	0.0851	2577	52.882	129.7		
COMBUSTOR	0	13	6 5														
42.700	207.707	2000	379.5(509)	1.3266	28.847	2138											
42.700	12.402	957	102.8(232)	1.3819	28.847	1510	2.465	3721	1.798	0.90045	19.869	0.0862	2572	52.069	129.4		
COMBUSTOR	0	14	7 5														
42.765	205.988	1999	379.3(509)	1.3267	28.847	2138											
42.765	12.390	958	103.2(233)	1.3818	28.847	1511	2.460	3717	1.799	0.89712	19.869	0.0865	2570	51.823	129.3		
COMBUSTOR	0	15	8 4														
44.310	174.712	1986	375.6(505)	1.3271	28.847	2131											
44.310	12.053	988	110.6(240)	1.3801	28.847	1533	2.376	3642	1.808	0.82944	19.869	0.0935	2538	46.941	127.7		
COMBUSTOR	0	16	9 4														
44.800	167.734	1982	374.5(504)	1.3273	28.847	2129											
44.800	12.136	999	113.3(243)	1.3795	28.847	1541	2.346	3615	1.811	0.82017	19.869	0.0946	2527	46.061	127.2		
COMBUSTOR	0	17	10 4														
45.485	161.261	1976	372.9(502)	1.3275	28.847	2127											
45.485	12.314	1010	116.2(246)	1.3788	28.847	1549	2.313	3584	1.813	0.81545	19.869	0.0951	2513	45.419	126.5		
COMBUSTOR	0	18	11 4														
46.200	156.128	1971	371.4(501)	1.3277	28.847	2124											
46.200	11.998	1009	115.9(245)	1.3788	28.847	1549	2.309	3576	1.814	0.79389	19.869	0.0977	2519	44.107	126.5		

	P	T	H		GAMMA	MOL-WT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMIP	G	IVAC	PHI	ETAC
COMBUSTOR	0	19	12	4														
46.260	155.615	1971	371.3(501)		1.3277	28.847	2124											
46.260	11.926	1008	115.6(245)		1.3769	28.847	1548	2.311	3577	1.814	0.78991	19.869	0.0982	2509	43.909	126.3		
COMBUSTOR	0	20	13	4														
47.310	148.327	1965	369.7(499)		1.3279	28.847	2121											
47.310	10.812	991	111.4(241)		1.3799	28.847	1535	2.342	3595	1.817	0.73225	19.869	0.1059	2514	40.913	126.5		
COMBUSTOR	0	21	14	4														
48.110	144.384	1961	368.6(498)		1.3281	28.847	2119											
48.110	9.539	962	104.2(234)		1.3816	28.847	1514	2.403	3637	1.818	0.67301	19.869	0.1153	2528	38.043	127.2		
COMBUSTOR	0	22	15	3														
48.725	141.739	1958	367.8(497)		1.3282	28.847	2117											
48.725	8.285	929	95.8(225)		1.3835	28.847	1488	2.479	3689	1.819	0.61426	19.869	0.1263	2546	35.215	128.1		
COMBUSTOR	0	23	16	3														
50.175	136.457	1952	366.1(495)		1.3284	28.847	2114											
50.175	6.028	856	77.9(207)		1.3875	28.847	1431	2.654	3798	1.821	0.49919	19.869	0.1554	2565	29.462	130.1		
COMBUSTOR	0	24	17	3														
50.705	133.966	1950	365.5(495)		1.3285	28.847	2113											
50.705	5.467	836	73.0(202)		1.3885	28.847	1415	2.704	3826	1.822	0.46686	19.869	0.1662	2596	27.760	130.6		
COMBUSTOR	0	25	18	4														
52.115	126.901	1946	364.2(493)		1.3286	28.847	2111											
52.115	4.364	795	62.8(192)		1.3905	28.847	1380	2.813	3884	1.825	0.39790	19.869	0.1950	2616	24.015	131.7		
COMBUSTOR	0	26	19	5														
54.215	114.989	1940	362.7(492)		1.3289	28.847	2108											
54.215	3.364	757	53.6(183)		1.3922	28.847	1348	2.918	3933	1.831	0.32612	19.869	0.2379	2634	19.933	132.6		
COMBUSTOR	0	27	20	4														
54.715	112.417	1939	362.4(492)		1.3289	28.847	2107											
54.715	3.189	750	51.9(181)		1.3925	28.847	1342	2.938	3942	1.832	0.31279	19.869	0.2480	2637	19.162	132.7		
COMBUSTOR	0	28	21	4														
55.465	109.553	1937	361.9(491)		1.3290	28.847	2106											
55.465	2.947	738	49.0(178)		1.3930	28.847	1331	2.972	3957	1.834	0.29486	19.869	0.2631	2643	18.134	133.0		
COMBUSTOR	0	29	22	4														
55.760	108.400	1937	361.8(491)		1.3290	28.847	2106											
55.760	2.863	734	48.0(177)		1.3932	28.847	1328	2.984	3963	1.834	0.28840	19.869	0.2690	2644	17.760	133.1		
COMBUSTOR	0	30	23	4														
56.225	95.415	1936	361.5(491)		1.3290	28.847	2106											
56.225	2.131	700	39.6(169)		1.3945	28.847	1297	3.094	4014	1.843	0.22811	19.869	0.3401	2664	14.228	134.1		
COMBUSTOR	0	31	24	5														
57.650	96.947	1933	360.8(490)		1.3291	28.847	2104											
57.650	1.867	670	32.3(162)		1.3955	28.847	1270	3.193	4054	1.841	0.21083	19.869	0.3679	2680	13.284	134.9		
COMBUSTOR	0	32	25	5														
57.845	97.490	1933	360.7(490)		1.3291	28.847	2104											
57.845	1.832	665	31.2(161)		1.3957	28.847	1265	3.210	4061	1.841	0.20873	19.869	0.3717	2682	13.172	135.0		
COMBUSTOR	0	33	26	6														
57.925	99.174	1933	360.7(490)		1.3291	28.847	2104											
57.925	1.847	664	30.8(160)		1.3957	28.847	1264	3.216	4063	1.840	0.21110	19.869	0.3675	2683	13.330	135.0		
COMBUSTOR	0	34	27	6														
58.205	100.806	1932	360.6(490)		1.3291	28.847	2104											
58.205	1.821	658	29.3(159)		1.3959	28.847	1258	3.236	4071	1.839	0.21037	19.869	0.3688	2686	13.310	135.2		
COMBUSTOR	0	35	28	5														
58.431	102.035	1932	360.5(490)		1.3292	28.847	2104											
58.431	1.804	654	28.3(158)		1.3960	28.847	1254	3.251	4077	1.838	0.21005	19.869	0.3693	2688	13.308	135.3		
COMBUSTOR	0	36	29	3														
59.155	102.201	1931	360.2(489)		1.3292	28.847	2103											
59.155	1.758	648	27.0(156)		1.3962	28.847	1249	3.269	4085	1.837	0.20671	19.869	0.3753	2691	13.118	135.4		
COMBUSTOR	0	37	30	6														
60.175	102.034	1930	359.9(489)		1.3292	28.847	2103											
60.175	1.741	646	26.6(156)		1.3963	28.847	1247	3.275	4084	1.837	0.20540	19.869	0.3777	2691	13.037	135.4		

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READING = 0092  BLOCK =  76  TIME = 186.867  MACH  7.4  PT = 993.249  TT = 2055.1                                                   PAGE  3

             P       T      H            GAMMA  MOLWT SONV  MACH  VEL    S      W/A       A      A/AC    FUNIM    G       LTAC  PHI  ETAC
COMBUSTOR        0   38   31    5
62.185      99.564 1928  359.5( 489) 1.3293 28.847 2102
62.185       1.859  662   30.5( 160) 1.3958 28.847 1262 3.214 4058 1.839 0.21255 19.869 0.3650   2660 13.403 134.9
COMBUSTOR        0   39   32    5
63.605      97.780 1928  359.3( 489) 1.3293 28.847 2102
63.605       1.956  675   33.6( 163) 1.3954 28.847 1274 3.168 4037 1.840 0.21831 19.869 0.3553   2671 13.697 134.4
COMBUSTOR        0   40   33    4
66.069      85.950 1927  359.1( 488) 1.3293 28.847 2101
66.069       1.932  698   39.0( 168) 1.3946 28.847 1295 3.090 4002 1.849 0.20693 19.869 0.3749   2657 12.870 133.7
COMBUSTOR        0   41   34    4
66.445      79.034 1927  359.0( 488) 1.3294 28.847 2101
66.445       1.807  701   39.6( 169) 1.3945 28.847 1298 3.079 3997 1.855 0.19238 19.869 0.4032   2655 11.949 133.6
NOZZLE   AE         42   35    2
88.681      79.034 1927  359.0( 488) 1.3294 28.847 2101
88.681       0.171  358  -43.1(  86) 1.3980 28.847  929 4.827 4486 1.855 0.04005 19.869 1.9370   2855  2.792 143.7
NOZZLE   PO         43   36    2
88.681      79.034 1927  359.0( 488) 1.3294 28.847 2101
88.681       0.157  350  -45.2(  84) 1.3978 28.847  918 4.901 4498 1.855 0.03771 19.869 2.0571   2860  2.636 144.0
FICTIVE COMBUSTR    59   52    0
66.445     318.108 1927  359.0( 488) 1.3293 28.847 2101
66.445       0.157  236  -72.9(  56) 1.3936 28.847  752 6.181 4649 1.759 0.05786 19.869 1.3409   2925  4.180 147.2
FICTIVE NOZZLE      60   53    0
88.681    ******** 1924  388.4( 488) 1.3291 28.848 2099
88.681       0.017   38 -121.6(   8) 1.3792 28.847   30116.270 4901 1.462 0.04005 19.869 1.9371   3038  3.050 152.8
```

READING = 0092 BLOCK = 76 TIME = 186.867 MACH 7.4 PT = 995.249 TT = 2053.1

XABS	P-IB	P-OB	PDA	QDA	Q-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	7.250E-01	0.000	-2.677E-01	0.000	0.000	0.000	2.470E-02	4.617E 00	7.299E-04	0.000	0.000
1.836E 01	7.250E-01	0.000	-2.410E 01	0.000	0.000	0.000	1.654E 02	4.617E 00	7.299E-04	0.000	0.000
3.070E 01	1.105E 00	0.000	-9.829E 01	0.000	0.000	0.000	5.053E 02	7.037E 00	1.113E-03	0.000	0.000
3.508E 01	1.956E 00	0.000	-1.975E 02	0.000	0.000	0.000	6.804E 02	1.245E 01	1.969E-03	0.000	0.000
3.555E 01	2.325E 00	0.000	-2.170E 02	0.000	0.000	0.000	7.013E 02	1.481E 01	2.341E-03	0.000	0.000
3.606E 01	2.200E 00	0.000	-2.399E 02	-7.012E 01	-7.012E 01	0.000	7.246E 02	1.401E 01	2.215E-03	0.000	0.000
3.648E 01	2.382E 00	0.000	-2.595E 02	-7.182E 01	-7.182E 01	0.000	7.443E 02	1.517E 01	2.399E-03	0.000	0.000
3.658E 01	2.366E 00	2.948E 00	-2.952E 02	-7.225E 01	-7.225E 01	0.000	7.491E 02	1.507E 01	2.383E-03	1.876E 01	2.968E-03
3.659E 01	2.366E 00	2.968E 00	-2.953E 02	-7.227E 01	-7.227E 01	0.000	7.494E 02	1.506E 01	2.382E-03	1.890E 01	2.988E-03
3.701E 01	2.300E 00	4.324E 00	-2.980E 02	-7.407E 01	-7.407E 01	0.000	7.931E 02	1.465E 01	2.316E-03	2.753E 01	4.353E-03
3.725E 01	2.236E 00	5.112E 00	-2.972E 02	-7.514E 01	-7.514E 01	0.000	8.188E 02	1.424E 01	2.252E-03	3.256E 01	5.147E-03
3.803E 01	2.035E 00	8.782E 00	-2.761E 02	-7.876E 01	-7.876E 01	0.000	9.020E 02	1.296E 01	2.049E-03	5.593E 01	8.842E-03
3.871E 01	6.309E 00	1.202E 01	-2.725E 02	-1.159E 02	-8.294E 01	-3.299E 01	9.785E 02	4.018E 01	6.352E-03	7.656E 01	1.211E-02
3.875E 01	6.528E 00	1.189E 01	-2.728E 02	-1.173E 02	-8.320E 01	-3.406E 01	9.825E 02	4.157E 01	6.572E-03	7.572E 01	1.197E-02
3.901E 01	8.150E 00	1.088E 01	-2.764E 02	-1.273E 02	-8.528E 01	-4.198E 01	1.012E 03	5.190E 01	8.205E-03	6.932E 01	1.096E-02
3.950E 01	1.145E 01	8.990E 00	-2.933E 02	-1.469E 02	-9.001E 01	-5.686E 01	1.068E 03	7.293E 01	1.153E-02	5.725E 01	9.051E-03
3.974E 01	1.089E 01	8.081E 00	-3.021E 02	-1.567E 02	-9.268E 01	-6.398E 01	1.095E 03	6.937E 01	1.097E-02	5.146E 01	8.136E-03
4.000E 01	1.026E 01	7.810E 00	-3.091E 02	-1.666E 02	-9.605E 01	-7.198E 01	1.126E 03	6.536E 01	1.033E-02	4.974E 01	7.863E-03
4.021E 01	1.079E 01	7.600E 00	-3.144E 02	-1.770E 02	-9.887E 01	-7.816E 01	1.150E 03	6.872E 01	1.086E-02	4.840E 01	7.652E-03
4.040E 01	1.129E 01	9.043E 00	-3.187E 02	-1.857E 02	-1.016E 02	-8.403E 01	1.172E 03	7.192E 01	1.137E-02	5.759E 01	9.105E-03
4.041E 01	1.132E 01	9.117E 00	-3.188E 02	-1.861E 02	-1.018E 02	-8.433E 01	1.174E 03	7.208E 01	1.140E-02	5.806E 01	9.179E-03
4.071E 01	1.210E 01	1.137E 01	-3.223E 02	-1.996E 02	-1.063E 02	-9.349E 01	1.209E 03	7.708E 01	1.219E-02	7.244E 01	1.145E-02
4.121E 01	1.337E 01	2.850E 00	-3.368E 02	-2.242E 02	-1.143E 02	-1.080E 02	1.267E 03	8.512E 01	1.346E-02	1.815E 01	2.869E-03
4.150E 01	1.412E 01	2.943E 00	-3.529E 02	-2.359E 02	-1.194E 02	-1.165E 02	1.302E 03	8.995E 01	1.422E-02	1.874E 01	2.963E-03
4.246E 01	6.475E 00	3.245E 00	-3.812E 02	-2.832E 02	-1.375E 02	-1.457E 02	1.416E 03	4.124E 01	6.519E-03	2.066E 01	3.267E-03
4.270E 01	6.980E 00	3.320E 00	-3.838E 02	-2.955E 02	-1.422E 02	-1.533E 02	1.444E 03	4.445E 01	7.028E-03	2.114E 01	3.343E-03
4.276E 01	7.117E 00	3.341E 00	-3.846E 02	-2.987E 02	-1.434E 02	-1.553E 02	1.452E 03	4.532E 01	7.165E-03	2.127E 01	3.363E-03
4.431E 01	1.037E 01	6.843E 00	-3.967E 02	-3.727E 02	-1.714E 02	-2.013E 02	1.638E 03	6.603E 01	1.044E-02	4.358E 01	6.889E-03
4.480E 01	1.140E 01	7.953E 00	-4.016E 02	-3.952E 02	-1.795E 02	-2.156E 02	1.698E 03	7.260E 01	1.148E-02	5.065E 01	8.008E-03
4.549E 01	1.067E 01	9.506E 00	-4.063E 02	-4.262E 02	-1.905E 02	-2.357E 02	1.782E 03	6.795E 01	1.074E-02	6.054E 01	9.571E-03
4.620E 01	9.906E 00	9.218E 00	-4.021E 02	-4.553E 02	-2.015E 02	-2.538E 02	1.869E 03	6.310E 01	9.975E-03	5.870E 01	9.281E-03
4.626E 01	9.844E 00	9.194E 00	-4.012E 02	-4.575E 02	-2.024E 02	-2.551E 02	1.877E 03	6.269E 01	9.911E-03	5.855E 01	9.256E-03
4.731E 01	8.725E 00	8.770E 00	-3.840E 02	-4.903E 02	-2.176E 02	-2.726E 02	2.006E 03	5.556E 01	8.784E-03	5.585E 01	8.830E-03
4.811E 01	5.475E 00	8.448E 00	-3.611E 02	-5.115E 02	-2.286E 02	-2.829E 02	2.105E 03	3.487E 01	5.512E-03	5.380E 01	8.505E-03
4.872E 01	8.200E 00	8.200E 00	-3.367E 02	-5.275E 02	-2.367E 02	-2.909E 02	2.182E 03	5.222E 01	8.256E-03	5.222E 01	8.256E-03
5.017E 01	5.594E 00	5.594E 00	-2.851E 02	-5.615E 02	-2.543E 02	-3.072E 02	2.363E 03	3.563E 01	5.632E-03	3.563E 01	5.632E-03
5.071E 01	4.642E 00	4.642E 00	-2.710E 02	-5.724E 02	-2.603E 02	-3.121E 02	2.429E 03	2.956E 01	4.673E-03	2.956E 01	4.673E-03
5.211E 01	3.500E 00	3.500E 00	-2.409E 02	-5.979E 02	-2.751E 02	-3.229E 02	2.607E 03	2.229E 01	3.524E-03	2.229E 01	3.524E-03
5.421E 01	1.775E 00	1.775E 00	-2.119E 02	-6.289E 02	-2.939E 02	-3.350E 02	2.873E 03	1.130E 01	1.787E-03	1.130E 01	1.787E-03
5.471E 01	2.500E 00	2.500E 00	-2.063E 02	-6.351E 02	-2.978E 02	-3.373E 02	2.937E 03	1.592E 01	2.517E-03	1.592E 01	2.517E-03
5.546E 01	2.177E 00	2.177E 00	-1.973E 02	-6.439E 02	-3.032E 02	-3.407E 02	3.033E 03	1.386E 01	2.192E-03	1.386E 01	2.192E-03
5.576E 01	2.050E 00	2.050E 00	-1.941E 02	-6.471E 02	-3.053E 02	-3.419E 02	3.070E 03	1.306E 01	2.064E-03	1.306E 01	2.064E-03
5.622E 01	1.019E 00	1.850E 00	-1.733E 02	-6.522E 02	-3.084E 02	-3.438E 02	3.102E 03	6.488E 00	1.026E-03	1.176E 01	1.863E-03
5.765E 01	3.235E 00	3.235E 00	-1.552E 02	-6.661E 02	-3.171E 02	-3.490E 02	3.210E 03	2.060E 01	3.257E-03	2.060E 01	3.257E-03
5.785E 01	3.425E 00	3.425E 00	-1.521E 02	-6.678E 02	-3.181E 02	-3.496E 02	3.234E 03	2.181E 01	3.448E-03	2.181E 01	3.448E-03
5.792E 01	3.503E 00	3.503E 00	-1.507E 02	-6.684E 02	-3.186E 02	-3.499E 02	3.245E 03	2.231E 01	3.527E-03	2.231E 01	3.527E-03
5.821E 01	3.775E 00	3.775E 00	-1.459E 02	-6.708E 02	-3.200E 02	-3.508E 02	3.280E 03	2.404E 01	3.801E-03	2.404E 01	3.801E-03
5.843E 01	3.240E 00	3.240E 00	-1.425E 02	-6.726E 02	-3.211E 02	-3.515E 02	3.309E 03	2.063E 01	3.262E-03	2.063E 01	3.262E-03
5.915E 01	1.525E 00	1.525E 00	-1.361E 02	-6.780E 02	-3.243E 02	-3.537E 02	3.402E 03	9.712E 00	1.535E-03	9.712E 00	1.535E-03
6.017E 01	3.475E 00	3.475E 00	-1.303E 02	-6.845E 02	-3.281E 02	-3.564E 02	3.532E 03	2.213E 01	3.499E-03	2.213E 01	3.499E-03
6.218E 01	9.750E-01	9.750E-01	-1.297E 02	-6.922E 02	-3.330E 02	-3.592E 02	3.790E 03	6.209E 00	9.816E-04	6.209E 00	9.816E-04
6.360E 01	1.075E 00	1.075E 00	-1.297E 02	-6.954E 02	-3.350E 02	-3.604E 02	3.972E 03	6.846E 00	1.082E-03	6.846E 00	1.082E-03
6.607E 01	1.169E 00	1.169E 00	-1.297E 02	-7.009E 02	-3.368E 02	-3.640E 02	4.289E 03	7.445E 00	1.177E-03	7.445E 00	1.177E-03
6.644E 01	1.183E 00	1.183E 00	-1.297E 02	-7.017E 02	-3.369E 02	-3.648E 02	4.337E 03	7.536E 00	1.191E-03	7.536E 00	1.191E-03
6.668E 01	9.680E-01	1.192E 00	-1.297E 02	-7.023E 02	-3.369E 02	-3.654E 02	4.368E 03	6.165E 00	9.746E-04	7.594E 00	1.201E-03
6.835E 01	9.600E-01	1.350E 00	-1.169E 02	-7.067E 02	-3.378E 02	-3.689E 02	4.584E 03	6.114E 00	9.665E-04	8.597E 00	1.359E-03

XABS	P-IN	P-OB	PDA	NOA	G-IB	G-OB	CAHALL	P-IN/PSO	P-IN/PTO	P-OB/PSO	P-OB/PTO
6.901E 01	1.002E 00	8.625E-01	-9.561E 01	[illegible]	-3.304E 02	-3.695E 02	[illegible]	[illegible]	1.009E-03	5.493E 00	8.684E-04
6.978E 01	1.050E 00	8.535E-01	-6.920E 01	-7.009E 02	-3.392E 02	-3.697E 02	[illegible]	[illegible]	1.057E-03	5.435E 00	8.593E-04
7.050E 01	1.134E 00	8.450E-01	-4.329E 01	-7.095E 02	-3.400E 02	-3.695E 02	4.848E 03	7.221E 00	1.142E-03	5.381E 00	8.507E-04
7.111E 01	1.206E 00	8.502E-01	-2.072E 01	-7.098E 02	-3.405E 02	-3.693E 02	4.922E 03	7.674E 00	1.213E-03	5.414E 00	8.560E-04
7.249E 01	1.125E 00	8.620E-01	2.736E 01	-7.111E 02	-3.415E 02	-3.696E 02	5.088E 03	7.164E 00	1.133E-03	5.489E 00	8.678E-04
7.402E 01	1.070E 00	8.750E-01	7.549E 01	-7.116E 02	-3.423E 02	-3.693E 02	5.273E 03	6.815E 00	1.077E-03	5.572E 00	8.809E-04
7.493E 01	1.038E 00	8.827E-01	1.136E 02	-7.110E 02	-3.427E 02	-3.683E 02	5.370E 03	6.608E 00	1.045E-03	5.621E 00	8.887E-04
7.625E 01	9.900E-01	0.000	1.350E 02	-7.096E 02	-3.432E 02	-3.664E 02	5.422E 03	6.305E 00	9.967E-04	0.000	0.000
7.910E 01	1.055E 00	0.000	1.759E 02	-7.105E 02	-3.441E 02	-3.664E 02	5.520E 03	6.719E 00	1.062E-03	0.000	0.000
8.300E 01	1.080E 00	0.000	2.215E 02	-7.114E 02	-3.450E 02	-3.664E 02	5.625E 03	6.878E 00	1.067E-03	0.000	0.000
8.581E 01	1.040E 00	0.000	2.451E 02	-7.123E 02	-3.459E 02	-3.664E 02	5.679E 03	6.623E 00	1.047E-03	0.000	0.000
8.867E 01	1.105E 00	0.000	2.709E 02	-7.139E 02	-3.475E 02	-3.664E 02	5.702E 03	7.037E 00	1.113E-03	0.000	0.000
8.868E 01	1.105E 00	0.000	2.709E 02	-7.139E 02	-3.475E 02	-3.664E 02	5.702E 03	7.038E 00	1.113E-03	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	7.918E 01	7.918E 01	1.971E-03	3.779E-02
4.041E 01	1.392E-01	7.932E 01	1.971E-03	3.781E-02
4.071E 01	4.251E 00	8.357E 01	1.986E-03	3.826E-02
4.121E 01	6.883E 00	9.045E 01	2.028E-03	3.889E-02
4.150E 01	4.157E 00	9.461E 01	2.070E-03	3.938E-02
4.246E 01	1.329E 01	1.079E 02	2.150E-03	3.861E-02
4.270E 01	3.242E 00	1.111E 02	2.161E-03	3.857E-02
4.276E 01	8.749E-01	1.120E 02	2.164E-03	3.849E-02
4.431E 01	2.013E 01	1.321E 02	2.214E-03	3.652E-02
4.480E 01	6.160E 00	1.383E 02	2.232E-03	3.643E-02
4.549E 01	8.570E 00	1.469E 02	2.251E-03	3.659E-02
4.620E 01	8.840E 00	1.557E 02	2.258E-03	3.570E-02
4.626E 01	7.302E-01	1.564E 02	2.258E-03	3.552E-02
4.731E 01	1.237E 01	1.686E 02	2.245E-03	3.267E-02
4.811E 01	8.720E 00	1.775E 02	2.212E-03	2.950E-02
4.872E 01	6.140E 00	1.837E 02	2.170E-03	2.633E-02
5.017E 01	1.244E 01	1.961E 02	2.076E-03	2.033E-02
5.071E 01	3.924E 00	2.000E 02	2.050E-03	1.874E-02
5.211E 01	9.297E 00	2.093E 02	1.995E-03	1.546E-02
5.421E 01	1.153E 01	2.209E 02	1.946E-03	1.234E-02
5.471E 01	2.418E 00	2.233E 02	1.936E-03	1.177E-02
5.546E 01	3.446E 00	2.267E 02	1.920E-03	1.100E-02
5.576E 01	1.300E 00	2.280E 02	1.915E-03	1.072E-02
5.622E 01	9.460E-01	2.290E 02	1.857E-03	8.207E-03
5.765E 01	2.718E 00	2.317E 02	1.813E-03	7.392E-03
5.785E 01	5.939E-01	2.323E 02	1.806E-03	7.287E-03
5.792E 01	2.444E-01	2.325E 02	1.796E-03	7.339E-03
5.821E 01	8.916E-01	2.334E 02	1.786E-03	7.257E-03
5.843E 01	6.838E-01	2.341E 02	1.778E-03	7.214E-03
5.915E 01	2.169E 00	2.362E 02	1.767E-03	7.053E-03
6.017E 01	3.015E 00	2.392E 02	1.761E-03	6.980E-03
6.218E 01	6.034E 00	2.453E 02	1.779E-03	7.301E-03
6.360E 01	4.409E 00	2.497E 02	1.793E-03	7.559E-03
6.607E 01	7.638E 00	2.573E 02	1.845E-03	7.387E-03
6.644E 01	1.113E 00	2.584E 02	1.872E-03	6.974E-03
6.668E 01	5.829E-01	2.590E 02	1.766E-03	4.700E-03
6.835E 01	3.452E 00	2.625E 02	1.770E-03	4.921E-03
6.901E 01	1.242E 00	2.637E 02	1.735E-03	4.190E-03
6.978E 01	1.344E 00	2.651E 02	1.736E-03	4.249E-03
7.050E 01	1.270E 00	2.663E 02	1.740E-03	4.368E-03
7.111E 01	1.096E 00	2.674F 02	1.743E-03	4.486E-03
7.249E 01	2.462E 00	2.699E 02	1.733E-03	4.362E-03
7.402E 01	2.669E 00	2.726E 02	1.725E-03	4.282E-03
7.493E 01	1.387E 00	2.739E 02	1.720E-03	4.234E-03
7.625E 01	7.442E-01	2.747E 02	1.721E-03	4.320E-03
7.910E 01	1.450E 00	2.761E 02	1.722E-03	4.505E-03
8.300E 01	1.587E 00	2.777E 02	1.714E-03	4.553E-03
8.581E 01	8.164E-01	2.785E 02	1.700E-03	4.405E-03
8.867E 01	3.405E-01	2.789E 02	1.702E-03	4.587E-03
8.868E 01	0.000	2.789E 02	1.702E-03	4.588E-03

400

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	-32.	(LBF)
MEASURED THRUST	-246.	(LBF)
CALCULATED SPECIFIC IMPULSE	-32.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	-246.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	-.0207	
MEASURED THRUST COEFFICIENT	-.1614	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	0.	(LBF)
NET THRUST	0.	(LBF)
SPECIFIC IMPULSE	0.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.0000	

MOMENTUM AND FORCES

INLET FRICTION DRAG	79.2	(LBF)
INLET MOMENTUM CHANGE	-397.8	(LBF)
COMBUSTOR FRICTION DRAG	179.3	(LBF)
COMBUSTOR STRUT DRAG	23.54	(LBF)
COMBUSTOR MOMENTUM CHANGE	-14.	(LBF)
NOZZLE FRICTION DRAG	20.44	(LBF)
NOZZLE STRUT DRAG	0.00	(LBF)
NOZZLE MOMENTUM CHANGE	380.	(LBF)
NOZZLE PRESSURE INTEGRAL	401.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-762.	(LBF)
TOTAL STRUT DRAG	23.54	(LBF)
CAVITY FORCE	-1261.	(LBF)
CALCULATED LOAD CELL FORCE	-2055.	(LBF)
MEASURED LOAD CELL FORCE	-2269.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE		

STATIONS

NOMINAL COWL LEADING EDGE	34.684	(IN)
SPIKE TRANSLATION	1.7050	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.589	(IN)
NOZZLE SHROUD TRAILING EDGE	74.924	(IN)
NOZZLE PLUG TRAILING EDGE	88.661	(IN)
STRUT LEADING EDGE	57.845	(IN)
STRUT TRAILING EDGE	66.445	(IN)
COMBUSTOR EXIT	66.445	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9926	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1066	
DELTA PT2	0.6946	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3203	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1081	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.8992	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9165	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9475	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.9021	
ENTHALPY AT PO - SUPERSONIC	-69.72	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-47.94	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0000
EQUIVALENCE RATIO	0.000
COMBUSTOR EFFICIENCY	0.000
TOTAL PRESSURE RATIO	0.2464
COMBUSTOR EFFECTIVENESS	0.7473
INJECTOR DISCHARGE COEFFICIENTS	

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CG	1.0630
NOZZLE COEFFICIENT - CT	1.0339
PROCESS EFFICIENCY	1.2919
KINETIC ENERGY EFFICIENCY	1.0807

FUEL INJECTIONS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.690	
1C	44.300	
2A	50.165	
2C	46.250	
3A	55.455	
3B	57.640	
4	46.190	

ORIGINAL PAGE IS OF POOR QUALITY

Reading 92

t = 205.77 sec.

READING = 0092 BLOCK = 97 TIME = 205.767 MACH 7.5 PT = 998.499 TT = 2854.2

RAMJET PERFORMANCE

12/23/74

S U M M A R Y R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	A*/A	[illegible]	A/AC	FOPTM	C	IVAC	PHI	ETAC
WIND TUNNEL		1	0 5														
0.000	998.499	2854	627.0(754)	1.2983	28.844	2527											
0.000	0.156	271	-64.3(65)	1.3952	28.843	807	7.286	5681	1.793	0.06331	16.066	0.9920	2960	5.787	165.3		
SPIKE TIP NS		2	0 6														
0.600	11.262	2854	627.0(754)	1.2982	28.843	2527											
0.600	10.328	2798	610.1(737)	1.3000	28.843	2504	0.367	919	2.102	0.06331	16.036	0.9920	3064	6.904	191.7		
WIND TUNNEL		3	0 0														
0.000	998.499	2854	627.0(754)	1.2983	28.844	2527											
0.000	0.166	275	-63.2(66)	1.3954	28.843	814	7.220	5877	1.793	0.06596	16.759	0.9920	3103	6.024	185.2		
SPIKE TIP NS		4	0 0														
0.600	11.262	2854	627.0(754)	1.2982	28.843	2527											
0.600	10.238	2792	608.4(736)	1.3002	28.843	2502	0.365	964	2.102	0.06596	16.759	0.9920	3103	6.988	185.2		
INLET THROAT		5	0 5														
40.400	351.546	2758	596.2(725)	1.3013	28.844	2487											
40.400	10.121	1132	146.9(276)	1.3713	28.843	1636	2.905	4752	1.855	0.79324	16.066	0.0792	2561	58.582	160.5		
INLET UPNRSK		6	0 3														
40.400	351.546	2758	598.2(725)	1.3013	28.844	2487											
40.400	8.731	1087	135.6(265)	1.3741	28.843	1605	2.998	4811	1.855	0.72113	16.066	0.0871	2600	53.919	161.6		
INLET DNNRSK		7	0 4														
40.400	104.579	2758	598.2(725)	1.3013	28.843	2487											
40.400	91.205	2671	572.6(700)	1.3041	28.843	2450	0.462	1132	1.936	0.72113	16.066	0.0871	2600	12.662	161.6		
COMBUSTOR		0 8	1 6														
40.410	208.847	2809	608.2(800)	1.3008	26.035	2611											
40.410	15.092	1472	200.1(395)	1.3519	26.035	1927	2.345	4519	2.029	0.79857	16.196	0.0792	2561	56.676	159.5	0.24	0.16
COMBUSTOR		0 9	2 5														
40.719	149.445	3113	605.5(893)	1.2868	26.974	2717											
40.719	21.332	1971	245.9(538)	1.3257	26.975	2195	1.933	4242	2.077	0.80147	16.196	0.0789	2567	52.638	158.5	0.24	0.44
COMBUSTOR		0 10	3 5														
41.209	172.880	2802	601.2(798)	1.3008	26.651	2608											
41.209	17.021	1591	229.6(429)	1.3455	26.651	1998	2.158	4312	2.042	0.79574	16.196	0.0795	2517	53.326	155.4	0.24	0.17
COMBUSTOR		0 11	4 3														
41.500	143.666	2844	598.5(811)	1.2988	26.704	2622											
41.500	19.501	1756	262.0(477)	1.3371	26.704	2091	1.963	4103	2.059	0.78755	16.196	0.0803	2467	50.221	152.3	0.24	0.21
COMBUSTOR		0 12	5 3														
42.460	99.103	2747	588.0(781)	1.3027	26.636	2585											
42.460	23.934	1952	340.9(536)	1.3300	26.636	2201	1.597	3516	2.078	0.74317	16.196	0.0851	2242	40.610	141.5	0.24	0.16
COMBUSTOR		0 13	6 21														
42.694	87.618	2551	592.7(779)	1.3131	24.446	2610											
42.694	24.608	1868	366.1(554)	1.3373	24.446	2254	1.494	3367	2.202	0.74081	16.312	0.0860	2249	38.759	137.9	0.46	0.05
COMBUSTOR		0 14	7 6														
42.704	92.472	2449	592.5(747)	1.3177	24.551	2567											
42.704	24.637	1764	366.9(522)	1.3425	24.551	2199	1.528	3360	2.186	0.73970	16.312	0.0861	2247	38.626	137.7	0.48	0.00
COMBUSTOR		0 15	8 21														
42.769	90.816	2441	591.7(744)	1.3181	24.345	2563											
42.769	24.824	1769	370.4(523)	1.3424	24.345	2202	1.511	3327	2.187	0.73848	16.312	0.0862	2235	38.183	137.6	0.48	0.00
COMBUSTOR		0 16	9 21														
44.310	66.114	2373	569.0(721)	1.3204	24.345	2529											
44.310	40.925	2109	481.4(634)	1.3295	24.344	2393	0.875	2095	2.203	0.68136	16.312	0.0935	2042	22.182	125.2	0.48	0.00
COMBUSTOR		0 17	10 21														
44.800	63.085	2457	561.3(748)	1.3162	24.445	2565											
44.800	46.045	2277	500.7(688)	1.3223	24.445	2475	0.703	1741	2.217	0.67335	16.312	0.0946	1996	16.218	122.5	0.48	0.05
COMBUSTOR		0 18	11 21														
45.489	62.465	2333	550.5(708)	1.3215	24.359	2509											
45.489	46.828	2174	497.5(655)	1.3270	24.359	2427	0.671	1626	2.202	0.66989	16.312	0.0951	1966	16.549	120.5	0.48	0.01

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	/A		A/AC	NOMIN	G	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.194	60.699	2289	542.7(704)	1.3235	23.975	2507											
46.194	39.498	2059	465.4(627)	1.3317	23.975	2384	0.825	1966	2.225	0.65269	16.336	0.0977	1967	19.967	121.7	0.53	0.01
COMBUSTOR	0	20	13 21														
46.204	60.878	2272	542.6(698)	1.3243	23.960	2499											
46.204	39.394	2040	464.8(621)	1.3325	23.960	2375	0.831	1973	2.222	0.65211	16.336	0.0978	1989	19.996	121.7	0.53	0.00
COMBUSTOR	0	21	14 21														
46.250	59.511	2246	542.0(723)	1.3264	22.808	2548											
46.250	38.916	2021	463.1(644)	1.3345	22.807	2425	0.819	1987	2.309	0.65351	16.415	0.0981	1991	20.183	121.3	0.70	0.02
COMBUSTOR	0	22	15 21														
46.260	60.008	2199	541.9(707)	1.3286	22.768	2526											
46.260	38.812	1972	462.6(628)	1.3368	22.768	2400	0.830	1992	2.301	0.65309	16.415	0.0981	1992	20.217	121.3	0.70	0.00
COMBUSTOR	0	23	16 21														
47.310	60.419	2151	527.2(690)	1.3304	22.762	2500											
47.310	27.695	1769	395.3(559)	1.3448	22.762	2280	1.127	2569	2.293	0.60527	16.415	0.1059	2067	24.164	125.9	0.70	0.00
COMBUSTOR	0	24	17 4														
48.110	60.570	2193	516.5(704)	1.3281	22.824	2519											
48.110	21.634	1691	343.3(531)	1.3474	22.824	2228	1.322	2944	2.298	0.55639	16.415	0.1152	2140	25.456	130.4	0.70	0.02
COMBUSTOR	0	25	18 4														
48.729	56.595	2342	508.3(754)	1.3209	22.973	2587											
48.729	20.775	1826	328.5(575)	1.3400	22.973	2301	1.304	3000	2.323	0.50748	16.415	0.1263	2203	23.659	134.2	0.70	0.08
COMBUSTOR	0	26	19 4														
50.179	51.794	2495	492.3(805)	1.3134	23.148	2653											
50.179	14.910	1837	262.2(576)	1.3374	23.148	2297	1.477	3393	2.347	0.41241	16.415	0.1554	2325	21.795	141.6	0.70	0.15
COMBUSTOR	0	27	20 3														
50.709	51.028	2490	487.8(804)	1.3134	23.155	2650											
50.709	12.767	1765	234.8(551)	1.3403	23.155	2254	1.579	3558	2.346	0.38570	16.415	0.1662	2359	21.326	143.7	0.70	0.15
COMBUSTOR	0	28	21 4														
52.119	48.449	2560	477.7(827)	1.3099	23.244	2678											
52.119	10.050	1741	191.4(542)	1.3403	23.244	2234	1.694	3785	2.358	0.32873	16.415	0.1950	2433	19.336	148.2	0.70	0.18
COMBUSTOR	0	29	22 4														
54.219	49.974	2478	462.9(802)	1.3132	23.107	2646											
54.219	6.500	1489	121.1(461)	1.3530	23.107	2082	1.967	4136	2.353	0.27001	16.451	0.2379	2511	17.355	152.6	0.72	0.17
COMBUSTOR	0	30	23 4														
54.719	45.746	2562	460.4(830)	1.3093	23.189	2682											
54.719	6.700	1594	123.5(495)	1.3467	23.169	2145	1.914	4106	2.369	0.25698	16.451	0.2480	2525	16.525	153.5	0.72	0.20
COMBUSTOR	0	31	24 4														
55.469	47.219	2521	456.9(816)	1.3111	23.160	2663											
55.469	5.769	1493	101.5(462)	1.3521	23.160	2082	2.025	4217	2.362	0.24413	16.451	0.2631	2545	15.999	154.7	0.72	0.19
COMBUSTOR	0	32	25 3														
55.760	48.245	2497	455.7(808)	1.3121	23.142	2653											
55.760	5.407	1445	92.7(446)	1.3549	23.142	2051	2.078	4262	2.357	0.23885	16.451	0.2689	2552	15.621	155.1	0.72	0.18
COMBUSTOR	0	33	26 4														
56.229	49.572	2398	453.9(774)	1.3166	23.059	2609											
56.229	3.416	1212	50.5(372)	1.3684	23.059	1891	2.375	4493	2.344	0.18886	16.451	0.3401	2595	13.186	157.7	0.72	0.15
COMBUSTOR	0	34	27 5														
57.654	30.894	2831	449.2(923)	1.2964	23.466	2789											
57.654	4.987	1829	93.8(570)	1.3329	23.467	2273	1.855	4217	2.426	0.17456	16.451	0.3679	2626	11.440	159.6	0.72	0.30
COMBUSTOR	0	35	28 3														
57.849	30.351	2853	448.7(930)	1.2954	23.488	2797											
57.849	5.009	1855	94.3(578)	1.3315	23.486	2287	1.842	4212	2.430	0.17282	16.451	0.3717	2630	11.311	159.9	0.72	0.31
COMBUSTOR	0	36	29 6														
57.929	30.936	2847	448.5(928)	1.2957	23.483	2795											
57.929	5.018	1843	92.1(574)	1.3321	23.483	2260	1.852	4223	2.428	0.17475	16.451	0.3675	2632	11.470	160.0	0.72	0.30
COMBUSTOR	0	37	30 3														
58.209	30.753	2866	447.9(935)	1.2948	23.503	2802											
58.209	5.050	1863	91.1(581)	1.3310	23.503	2290	1.845	4225	2.430	0.17421	16.451	0.3687	2637	11.439	160.3	0.72	0.31

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                P      T      H              GAMMA  MOLWT SONV  MACH  VEL   [illegible]  [illegible]  [illegible]  A/AC   PORTH  [illegible]  ISAC  PHI  ETAC
COMBUSTOR           0   38   31    4
58.435        35.199 2716   447.3( 663) 1.3017 23.363 2743
58.435         4.265 1623    64.7( 502) 1.3434 23.365 2154 2.031 4376 2.405 0.17385 16.451 0.3695   2641 11.822 160.5 0.72 0.20
COMBUSTOR           0   39   32   11
59.159        99.774 2157   445.9( 692) 1.3276 22.868 2495
59.159         1.750  733   -23.5( 223) 1.3929 22.868 1490 3.252 4847 2.253 0.17115 16.451 0.3753   2646 12.091 160.9 0.72 0.06
COMBUSTOR           0   40   33    6
60.179        39.800 2605   444.1( 844) 1.3068 23.269 2697
60.179         3.600 1434    39.4( 441) 1.3541 23.269 2037 2.209 4500 2.384 0.17006 16.451 0.3777   2649 11.093 161.0 0.72 0.23
COMBUSTOR           0   41   34    4
62.189        34.719 2752   441.1( 895) 1.2999 23.412 2756
62.189         4.462 1673    62.2( 518) 1.3404 23.413 2182 1.996 4355 2.409 0.17598 16.451 0.3050   2644 11.910 160.7 0.72 0.26
COMBUSTOR           0   42   35    4
63.609        33.191 2821   439.3( 919) 1.2966 23.482 2783
63.609         4.981 1790    74.2( 556) 1.3344 23.483 2249 1.901 4274 2.418 0.18075 16.451 0.3553   2639 12.005 160.4 0.72 0.30
COMBUSTOR           0   43   36    5
66.073        23.729 3305   435.3(1088) 1.2725 23.966 2954
66.073         7.666 2571   161.2( 820) 1.2988 23.970 2532 1.407 3704 2.481 0.17133 16.451 0.3749   2630  9.861 159.9 0.72 0.47
COMBUSTOR           0   44   37    4
66.449        21.209 3424   434.6(1130) 1.2657 24.089 2991
66.449         8.078 2775   188.8( 891) 1.2900 24.096 2738 1.291 3509 2.498 0.15928 16.451 0.4032   2629  6.687 159.6 0.72 0.52
COMBUSTOR  REGEN   45   38    5
66.449        21.209 3702   580.9(1265) 1.2482 24.073 3122
66.449        10.194 3853   360.5(1066) 1.2716 24.091 2922 1.116 3260 2.538 0.15928 16.451 0.4032   2720  6.070 165.3 0.72 0.52
NOZZLE  AE         46   39    5
88.685        21.209 3424   434.6(1118) 1.2657 24.089 2991
88.685         0.507 1423  -277.2( 428) 1.3463 24.097 1988 3.001 5968 2.498 0.03316 16.451 1.9371   3303  3.075 200.8 0.72 0.52
NOZZLE  PO         47   40    5
88.685        21.209 3424   434.6(1118) 1.2657 24.089 2991
88.685         0.156 1044  -396.2( 309) 1.3684 24.097 1717 3.756 6447 2.498 0.01505 16.451 4.2676   3467  1.506 210.8 0.72 0.52
NOZZLE  AE REGEN   48   41    5
88.685        21.209 3782   580.9(1265) 1.2482 24.073 3122
88.685         0.563 1656  -201.5( 504) 1.3338 24.097 2135 2.931 6257 2.538 0.03316 16.451 1.9371   3479  3.224 211.5 0.72 0.52
NOZZLE  PO REGEN   49   42    5
88.685        21.209 3782   580.9(1265) 1.2482 24.073 3122
88.685         0.156 1190  -350.8( 354) 1.3599 24.097 1828 3.736 6628 2.538 0.01597 16.451 4.5961   3675  1.483 223.4 0.72 0.52
FICTIVE COMBUSTR   65   58    0
66.449       351.546 4688   434.6(1585) 1.2079 25.501 3323
66.449         0.156  817  -979.0( 231) 1.3667 25.612 1474 5.707 8410 2.316 0.02664 16.451 2.4108   4397  3.482 267.3 0.72 1.00
FICTIVE NOZZLE     66   59    0
88.685        15.342 3370   413.7(1110) 1.2674 24.089 2969
88.685         0.593 1578  -227.0( 478) 1.3378 24.097 2087 2.713 5662 2.516 0.03316 16.451 1.9371   3169  2.916 193.9 0.72 0.52
```

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/P80	P-IB/P10	P-OB/P80	P-OB/P10
6.981E-01	6.100E-01	0.000	-2.719E-01	0.000	0.000	0.000	2.470E-02	3.904E 00	6.109E-04	0.000	0.000
1.836E 01	6.100E-01	0.000	-2.033E 01	0.000	0.000	0.000	1.634E 02	3.904E 00	6.109E-04	0.000	0.000
3.070E 01	1.050E 00	0.000	-8.762E 01	0.000	0.000	0.000	5.053E 02	6.720E 00	1.052E-03	0.000	0.000
3.508E 01	1.986E 00	0.000	-1.860E 02	0.000	0.000	0.000	6.804E 02	1.271E 01	1.989E-03	0.000	0.000
3.555E 01	2.285E 00	0.000	-2.055E 02	0.000	0.000	0.000	7.013E 02	1.462E 01	2.288E-03	0.000	0.000
3.606E 01	2.165E 00	0.000	-2.280E 02	-1.811E 02	-1.811E 02	0.000	7.246E 02	1.386E 01	2.168E-03	0.000	0.000
3.648E 01	2.340E 00	0.000	-2.473E 02	-1.855E 02	-1.855E 02	0.000	7.443E 02	1.498E 01	2.344E-03	0.000	0.000
3.659E 01	2.337E 00	3.154E 00	-2.851E 02	-1.866E 02	-1.866E 02	0.000	7.493E 02	1.496E 01	2.340E-03	2.019E 01	3.159E-03
3.659E 01	2.337E 00	3.172E 00	-2.852E 02	-1.867E 02	-1.867E 02	0.000	7.496E 02	1.496E 01	2.340E-03	2.030E 01	3.177E-03
3.701E 01	2.325E 00	4.410E 00	-2.872E 02	-1.913E 02	-1.913E 02	0.000	7.928E 02	1.488E 01	2.328E-03	2.823E 01	4.417E-03
3.726E 01	2.241E 00	5.150E 00	-2.863E 02	-1.941E 02	-1.941E 02	0.000	8.190E 02	1.434E 01	2.244E-03	3.296E 01	5.158E-03
3.803E 01	1.980E 00	8.748E 00	-2.668E 02	-2.034E 02	-2.034E 02	0.000	9.020E 02	1.267E 01	1.983E-03	5.599E 01	8.761E-03
3.872E 01	6.360E 00	1.196E 01	-2.613E 02	-2.740E 02	-2.189E 02	-5.506E 01	9.787E 02	4.071E 01	6.370E-03	7.657E 01	1.198E-02
3.875E 01	6.557E 00	1.185E 01	-2.615E 02	-2.766E 02	-2.199E 02	-5.664E 01	9.822E 02	4.197E 01	6.567E-03	7.586E 01	1.187E-02
3.901E 01	8.210E 00	1.092E 01	-2.653E 02	-2.996E 02	-2.297E 02	-6.986E 01	1.012E 03	5.255E 01	8.222E-03	6.991E 01	1.094E-02
3.950E 01	1.171E 01	9.173E 00	-2.826E 02	-3.494E 02	-2.547E 02	-9.470E 01	1.068E 03	7.498E 01	1.173E-02	5.871E 01	9.186E-03
3.974E 01	1.129E 01	8.319E 00	-2.922E 02	-3.770E 02	-2.702E 02	-1.068E 02	1.095E 03	7.223E 01	1.130E-02	5.324E 01	8.331E-03
4.000E 01	1.082E 01	8.003E 00	-2.993E 02	-4.099E 02	-2.900E 02	-1.199E 02	1.126E 03	6.923E 01	1.083E-02	5.122E 01	8.015E-03
4.021E 01	1.432E 01	7.750E 00	-3.072E 02	-4.378E 02	-3.074E 02	-1.304E 02	1.150E 03	9.162E 01	1.434E-02	4.960E 01	7.762E-03
4.040E 01	1.751E 01	1.227E 01	-3.156E 02	-4.638E 02	-3.238E 02	-1.400E 02	1.172E 03	1.121E 02	1.754E-02	7.852E 01	1.229E-02
4.041E 01	1.768E 01	1.250E 01	-3.159E 02	-4.651E 02	-3.246E 02	-1.405E 02	1.175E 03	1.132E 02	1.771E-02	8.003E 01	1.252E-02
4.072E 01	2.285E 01	1.981E 01	-3.249E 02	-5.080E 02	-3.521E 02	-1.560E 02	1.210E 03	1.463E 02	2.289E-02	1.268E 02	1.984E-02
4.121E 01	3.105E 01	2.987E 00	-3.662E 02	-5.782E 02	-3.981E 02	-1.801E 02	1.267E 03	1.988E 02	3.110E-02	1.912E 01	2.992E-03
4.150E 01	3.592E 01	3.076E 00	-4.119E 02	-6.212E 02	-4.271E 02	-1.941E 02	1.301E 03	2.299E 02	3.598E-02	1.969E 01	3.081E-03
4.246E 01	4.450E 01	3.368E 00	-5.725E 02	-7.915E 02	-5.284E 02	-2.631E 02	1.416E 03	2.848E 02	4.457E-02	2.156E 01	3.373E-03
4.269E 01	4.578E 01	3.440E 00	-6.119E 02	-8.407E 02	-5.539E 02	-2.868E 02	1.444E 03	2.930E 02	4.584E-02	2.202E 01	3.445E-03
4.270E 01	4.583E 01	3.443E 00	-6.136E 02	-8.428E 02	-5.550E 02	-2.878E 02	1.445E 03	2.933E 02	4.590E-02	2.203E 01	3.448E-03
4.277E 01	4.619E 01	3.462E 00	-6.245E 02	-8.569E 02	-5.621E 02	-2.949E 02	1.452E 03	2.956E 02	4.625E-02	2.216E 01	3.468E-03
4.431E 01	5.459E 01	2.726E 01	-8.010E 02	-1.225E 03	-7.263E 02	-4.988E 02	1.638E 03	3.494E 02	5.467E-02	1.745E 02	2.730E-02
4.480E 01	5.726E 01	3.483E 01	-8.409E 02	-1.352E 03	-7.772E 02	-5.747E 02	1.696E 03	3.665E 02	5.735E-02	2.229E 02	3.488E-02
4.549E 01	4.819E 01	4.547E 01	-8.685E 02	-1.529E 03	-8.469E 02	-6.817E 02	1.782E 03	3.084E 02	4.826E-02	2.910E 02	4.554E-02
4.619E 01	3.890E 01	4.010E 01	-8.415E 02	-1.703E 03	-9.152E 02	-7.877E 02	1.868E 03	2.490E 02	3.896E-02	2.566E 02	4.016E-02
4.620E 01	3.877E 01	4.002E 01	-8.402E 02	-1.705E 03	-9.161E 02	-7.891E 02	1.869E 03	2.481E 02	3.883E-02	2.561E 02	4.008E-02
4.625E 01	3.816E 01	3.967E 01	-8.371E 02	-1.716E 03	-9.205E 02	-7.958E 02	1.875E 03	2.443E 02	3.822E-02	2.539E 02	3.973E-02
4.626E 01	3.803E 01	3.959E 01	-8.366E 02	-1.719E 03	-9.214E 02	-7.972E 02	1.876E 03	2.434E 02	3.809E-02	2.534E 02	3.965E-02
4.731E 01	2.420E 01	3.159E 01	-7.524E 02	-1.960E 03	-1.017E 03	-9.430E 02	2.006E 03	1.549E 02	2.424E-02	2.022E 02	3.164E-02
4.811E 01	1.777E 01	2.549E 01	-6.722E 02	-2.136E 03	-1.086E 03	-1.050E 03	2.105E 03	1.138E 02	1.780E-02	1.632E 02	2.553E-02
4.873E 01	2.077E 01	2.077E 01	-6.046E 02	-2.270E 03	-1.136E 03	-1.133E 03	2.182E 03	1.330E 02	2.081E-02	1.330E 02	2.081E-02
5.018E 01	1.491E 01	1.491E 01	-4.712E 02	-2.534E 03	-1.246E 03	-1.288E 03	2.363E 03	9.543E 01	1.493E-02	9.543E 01	1.493E-02
5.071E 01	1.277E 01	1.277E 01	-4.330E 02	-2.607E 03	-1.284E 03	-1.323E 03	2.430E 03	8.171E 01	1.279E-02	8.171E 01	1.279E-02
5.212E 01	1.005E 01	1.005E 01	-3.487E 02	-2.772E 03	-1.375E 03	-1.398E 03	2.607E 03	6.432E 01	1.007E-02	6.432E 01	1.007E-02
5.422E 01	6.500E 00	6.500E 00	-2.576E 02	-2.975E 03	-1.490E 03	-1.485E 03	2.873E 03	4.160E 01	6.510E-03	4.160E 01	6.510E-03
5.472E 01	6.700E 00	6.700E 00	-2.404E 02	-3.018E 03	-1.514E 03	-1.503E 03	2.937E 03	4.288E 01	6.710E-03	4.288E 01	6.710E-03
5.547E 01	5.769E 00	5.769E 00	-2.163E 02	-3.074E 03	-1.547E 03	-1.527E 03	3.035E 03	3.692E 01	5.777E-03	3.692E 01	5.777E-03
5.576E 01	5.407E 00	5.407E 00	-2.079E 02	-3.094E 03	-1.559E 03	-1.535E 03	3.070E 03	3.461E 01	5.415E-03	3.461E 01	5.415E-03
5.623E 01	2.006E 00	4.825E 00	-1.639E 02	-3.124E 03	-1.578E 03	-1.547E 03	3.102E 03	1.284E 01	2.009E-03	3.086E 01	4.832E-03
5.765E 01	4.987E 00	4.987E 00	-1.290E 02	-3.200E 03	-1.630E 03	-1.571E 03	3.210E 03	3.192E 01	4.994E-03	3.192E 01	4.994E-03
5.789E 01	5.009E 00	5.009E 00	-1.243E 02	-3.209E 03	-1.636E 03	-1.573E 03	3.234E 03	3.206E 01	5.017E-03	3.206E 01	5.017E-03
5.793E 01	5.018E 00	5.018E 00	-1.223E 02	-3.212E 03	-1.638E 03	-1.573E 03	3.245E 03	3.212E 01	5.026E-03	3.212E 01	5.026E-03
5.821E 01	5.050E 00	5.050E 00	-1.157E 02	-3.223E 03	-1.647E 03	-1.576E 03	3.280E 03	3.232E 01	5.058E-03	3.232E 01	5.058E-03
5.843E 01	4.265E 00	4.265E 00	-1.112E 02	-3.231E 03	-1.653E 03	-1.578E 03	3.309E 03	2.730E 01	4.271E-03	2.730E 01	4.271E-03
5.916E 01	1.750E 00	1.750E 00	-1.030E 02	-3.256E 03	-1.672E 03	-1.583E 03	3.402E 03	1.120E 01	1.753E-03	1.120E 01	1.753E-03
6.018E 01	3.600E 00	3.600E 00	-9.682E 01	-3.285E 03	-1.694E 03	-1.591E 03	3.532E 03	2.304E 01	3.605E-03	2.304E 01	3.605E-03
6.219E 01	4.462E 00	4.462E 00	-9.588E 01	-3.333E 03	-1.723E 03	-1.610E 03	3.790E 03	2.856E 01	4.469E-03	2.856E 01	4.469E-03
6.361E 01	4.981E 00	4.981E 00	-9.588E 01	-3.364E 03	-1.739E 03	-1.625E 03	3.972E 03	3.188E 01	4.989E-03	3.188E 01	4.989E-03
6.607E 01	7.668E 00	7.668E 00	-9.588E 01	-3.430E 03	-1.773E 03	-1.657E 03	4.289E 03	4.906E 01	7.680E-03	4.906E 01	7.680E-03

ORIGINAL PAGE IS
OF POOR QUALITY

XABS	P-IB	P-OB	PDA	ROA	G-IH	G-OB	CAAALL	P-IB/PSO	F-IB/FIO	P-OB/PSO	F-OB/FIO
6.645E 01	8.078E 00	6.078E 00	-9.588E 01	-3.442E 03	-1.779E 03	-1.663E 03	4.557E 03	5.170E 01	4.090E-03	5.170E 01	8.090E-03
6.669E 01	4.279E 00	6.340E 00	-9.588E 01	-3.451E 03	-1.762E 03	-1.688E 03	4.500E 03	2.759E 01	4.266E-03	5.336E 01	8.353E-03
6.835E 01	4.640E 00	3.655E 00	-3.575E 01	-3.510E 03	-1.805E 03	-1.705E 03	4.504E 03	2.970E 01	4.647E-03	2.559E 01	3.600E-03
6.902E 01	3.658E 00	8.550E-01	2.925E 01	-3.553E 03	-1.812E 03	-1.721E 03	4.605E 03	2.541E 01	3.604E-03	5.472E 00	8.563E-04
6.979E 01	2.530E 00	1.509E 00	9.291E 01	-3.561E 03	-1.820E 03	-1.742E 03	4.760E 03	1.619E 01	2.534E-03	9.056E 00	1.511E-03
7.051E 01	1.859E 00	2.120E 00	1.462E 02	-3.592E 03	-1.826E 03	-1.766E 03	4.848E 03	1.190E 01	1.682E-03	1.357E 01	2.123E-03
7.112E 01	1.290E 00	1.908E 00	1.849E 02	-3.617E 03	-1.831E 03	-1.786E 03	4.922E 03	8.257E 00	1.292E-03	1.221E 01	1.911E-03
7.250E 01	1.125E 00	1.427E 00	2.502E 02	-3.659E 03	-1.840E 03	-1.819E 03	5.088E 03	7.200E 00	1.127E-03	9.136E 00	1.430E-03
7.403E 01	9.765E-01	8.950E-01	3.030E 02	-3.691E 03	-1.849E 03	-1.842E 03	5.273E 03	6.250E 00	9.779E-04	5.720E 00	8.963E-04
7.493E 01	8.887E-01	5.804E-01	3.357E 02	-3.709E 03	-1.853E 03	-1.856E 03	5.370E 03	5.688E 00	8.901E-04	3.715E 00	5.813E-04
7.626E 01	7.600E-01	0.000	3.531E 02	-3.739E 03	-1.859E 03	-1.880E 03	5.422E 03	4.864E 00	7.611E-04	0.000	0.000
7.911E 01	1.070E 00	0.000	3.897E 02	-3.749E 03	-1.869E 03	-1.880E 03	5.520E 03	6.848E 00	1.072E-03	0.000	0.000
8.301E 01	1.145E 00	0.000	4.370E 02	-3.759E 03	-1.879E 03	-1.880E 03	5.625E 03	7.328E 00	1.147E-03	0.000	0.000
8.582E 01	1.075E 00	0.000	4.617E 02	-3.769E 03	-1.889E 03	-1.880E 03	5.679E 03	6.880E 00	1.077E-03	0.000	0.000
8.868E 01	1.145E 00	0.000	4.885E 02	-3.765E 03	-1.905E 03	-1.880E 03	5.702E 03	7.328E 00	1.147E-03	0.000	0.000
8.868E 01	1.145E 00	0.000	4.885E 02	-3.765E 03	-1.905E 03	-1.880E 03	5.702E 03	7.329E 00	1.147E-03	0.000	0.000

READING = 0092 BLOCK = 97 TIME = 205.767 MACH 7.3 PI = 998.499 TT = 2854.2

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.379E 01	8.379E 01	2.100E-03	3.588E-02
4.041E 01	1.639E-01	8.395E 01	2.773E-03	4.205E-02
4.072E 01	5.203E 00	8.915E 01	2.510E-03	5.705E-02
4.121E 01	8.113E 00	9.727E 01	2.797E-03	4.518E-02
4.150E 01	4.835E 00	1.021E 02	2.640E-03	5.126E-02
4.246E 01	1.438E 01	1.165E 02	2.910E-03	5.151E-02
4.269E 01	3.428E 00	1.199E 02	3.269E-03	4.860E-02
4.270E 01	1.403E-01	1.200E 02	2.894E-03	5.404E-02
4.277E 01	8.569E-01	1.209E 02	2.832E-03	5.574E-02
4.431E 01	1.673E 01	1.376E 02	3.138E-03	5.544E-02
4.480E 01	3.831E 00	1.415E 02	3.236E-03	5.230E-02
4.549E 01	4.855E 00	1.463E 02	3.330E-03	4.935E-02
4.619E 01	5.233E 00	1.516E 02	3.238E-03	5.081E-02
4.620E 01	7.912E-02	1.516E 02	3.171E-03	5.204E-02
4.625E 01	3.695E-01	1.520E 02	3.353E-03	4.977E-02
4.626E 01	8.157E-02	1.521E 02	3.174E-03	5.306E-02
4.731E 01	8.822E 00	1.609E 02	2.965E-03	5.111E-02
4.811E 01	7.111E 00	1.680E 02	2.818E-03	4.679E-02
4.873E 01	5.317E 00	1.733E 02	2.804E-03	4.477E-02
5.018E 01	1.144E 01	1.848E 02	2.761E-03	3.600E-02
5.071E 01	4.022E 00	1.888E 02	2.857E-03	3.141E-02
5.212E 01	1.012E 01	1.989E 02	2.747E-03	2.602E-02
5.422E 01	1.333E 01	2.122E 02	2.708E-03	1.944E-02
5.472E 01	2.883E 00	2.151E 02	2.632E-03	2.003E-02
5.547E 01	4.132E 00	2.193E 02	2.671E-03	1.766E-02
5.576E 01	1.569E 00	2.208E 02	2.625E-03	1.702E-02
5.623E 01	1.176E 00	2.220E 02	2.500E-03	1.186E-02
5.765E 01	3.275E 00	2.253E 02	2.441E-03	1.546E-02
5.785E 01	7.426E-01	2.260E 02	2.820E-03	1.308E-02
5.793E 01	3.519E-01	2.264E 02	3.216E-03	1.256E-02
5.821E 01	1.232E 00	2.276E 02	2.814E-03	1.393E-02
5.843E 01	9.416E-01	2.285E 02	2.802E-03	1.246E-02
5.916E 01	3.131E 00	2.317E 02	2.669E-03	6.649E-03
6.018E 01	3.802E 00	2.355E 02	2.026E-03	1.306E-02
6.219E 01	7.042E 00	2.425E 02	2.562E-03	1.363E-02
6.361E 01	5.730E 00	2.483E 02	2.698E-03	1.414E-02
6.607E 01	9.652E 00	2.579E 02	2.887E-03	1.737E-02
6.645E 01	1.366E 00	2.593E 02	3.219E-03	1.573E-02
6.669E 01	8.682E-01	2.601E 02	3.237E-03	1.381E-02
6.835E 01	5.839E 00	2.660E 02	3.139E-03	1.083E-02
6.902E 01	1.865E 00	2.678E 02	3.025E-03	7.276E-03
6.979E 01	1.847E 00	2.697E 02	2.999E-03	6.725E-03
7.051E 01	1.656E 00	2.713E 02	2.990E-03	6.641E-03
7.112E 01	1.314E 00	2.727E 02	2.953E-03	5.693E-03
7.250E 01	2.624E 00	2.753E 02	2.913E-03	4.637E-03
7.403E 01	2.500E 00	2.776E 02	2.854E-03	3.845E-03
7.493E 01	1.116E 00	2.789E 02	2.808E-03	3.204E-03
7.626E 01	5.576E-01	2.795E 02	2.807E-03	3.278E-03
7.911E 01	1.182E 00	2.806E 02	2.850E-03	4.201E-03
8.301E 01	1.412E 00	2.820E 02	2.842E-03	4.383E-03
8.582E 01	7.309E-01	2.828E 02	2.819E-03	4.165E-03
8.868E 01	3.025E-01	2.831E 02	2.817E-03	4.340E-03
8.868E 01	0.000	2.831E 02	2.817E-03	4.341E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	209.	(LBF)
MEASURED THRUST	563.	(LBF)
CALCULATED SPECIFIC IMPULSE	618.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	1669.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.1409	
MEASURED THRUST COEFFICIENT	0.3802	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	3359.	(LBF)
NET THRUST	378.	(LBF)
SPECIFIC IMPULSE	1120.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.2552	

MOMENTUM AND FORCES

INLET FRICTION DRAG	83.8	(LBF)
INLET MOMENTUM CHANGE	-599.4	(LBF)
COMBUSTOR FRICTION DRAG	175.5	(LBF)
COMBUSTOR STRUT DRAG	-3.37	(LBF)
COMBUSTOR MOMENTUM CHANGE	46.	(LBF)
NOZZLE FRICTION DRAG	23.81	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	561.	(LBF)
NOZZLE PRESSURE INTEGRAL	584.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-741.	(LBF)
TOTAL STRUT DRAG	-3.37	(LBF)
CAVITY FORCE	-1367.	(LBF)
CALCULATED LOAD CELL FORCE	-1899.	(LBF)
MEASURED LOAD CELL FORCE	-1544.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0, 0.0,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7090	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.593	(IN)
NOZZLE SHROUD TRAILING EDGE	74.933	(IN)
NOZZLE PLUG TRAILING EDGE	88.685	(IN)
STRUT LEADING EDGE	57.849	(IN)
STRUT TRAILING EDGE	66.449	(IN)
COMBUSTOR EXIT	66.449	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9920	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1034	
DELTA PT2	0.0910	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3521	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1047	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9100	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9154	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9308	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8804	
ENTHALPY AT PO - SUPERSONIC	-45.29	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-10.44	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0210
EQUIVALENCE RATIO	0.716
COMBUSTOR EFFICIENCY	0.517
TOTAL PRESSURE RATIO	0.0603
COMBUSTOR EFFECTIVENESS	0.4869
INJECTOR DISCHARGE COEFFICIENTS	0.9325, 0.6256, 1.6488,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9656
NOZZLE COEFFICIENT - CT	0.8974
PROCESS EFFICIENCY	0.9296
KINETIC ENERGY EFFICIENCY	0.9245

FUEL INJECTIONS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.694	B
1C	44.300	
2A	50.169	
2C	46.250	E
3A	55.459	
3B	57.644	
4	46.194	C

Reading 92

t = 227.37 sec.

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T


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                P       T      H             GAMMA  MOLWT SONV  MACH   VEL    S      W/A      W      A/AC   MUMIN   G     IVAC  PHI  ETAC
WIND TUNNEL             1      0   5
 0.000     997.999 2843    623.6( 750) 1.2985 28.859 2522
 0.000       0.156  270    -64.6(  65) 1.3952 28.858  805 7.288 5868 1.792 0.06342 16.119 0.9923   2960  5.784 184.6
SPIKE TIP NS            2      0   6
 0.600      11.212 2843    623.6( 750) 1.2985 28.858 2522
 0.600      10.274 2787    606.6( 734) 1.3003 28.858 2498 0.369  921 2.101 0.06342 16.119 0.9923   3073  0.908 190.6
WIND TUNNEL             3      0   0
 0.000     997.999 2843    623.6( 750) 1.2985 28.859 2522
 0.000       0.165  274    -63.6(  66) 1.3954 28.858  811 7.228 5864 1.792 0.06582 16.726 0.9923   3091  5.998 184.6
SPIKE TIP NS            4      0   0
 0.600      11.212 2843    623.6( 750) 1.2985 28.858 2522
 0.600      10.192 2781    605.1( 732) 1.3004 28.858 2496 0.385  962 2.101 0.06582 16.728 0.9923   3090  0.984 184.8
INLET THROAT            5      0   5
40.400     355.033 2736    591.7( 719) 1.3019 28.859 2477
40.400      10.012 1116    142.7( 272) 1.3722 28.858 1624 2.919 4740 1.852 0.79443 16.119 0.0792   2578 58.520 159.9
INLET UPNRSK            6      0   3
40.400     355.033 2736    591.7( 719) 1.3019 28.859 2477
40.400       6.637 1072    131.6( 261) 1.3749 28.858 1593 3.012 4798 1.852 0.72221 16.119 0.0871   2597 53.854 161.1
INLET DNNRSK            7      0   4
40.400     104.401 2736    591.7( 719) 1.3019 28.858 2477
40.400      91.080 2651    566.4( 694) 1.3046 28.858 2441 0.461 1126 1.936 0.72221 16.119 0.0671   2597 12.633 161.1
COMBUSTOR          0    8      1   5
40.410     200.367 2817    603.6( 804) 1.3002 26.618 2615
40.410      15.616 1507    202.4( 405) 1.3497 26.618 1949 2.299 4481 2.036 0.79990 16.232 0.0792   2577 55.699 156.6 0.24 0.17
COMBUSTOR          0    9      2   5
40.717     143.444 3144    600.8( 903) 1.2851 26.983 2728
40.717      22.384 2038    250.7( 558) 1.3226 26.984 2229 1.878 4186 2.085 0.80282 16.232 0.0789   2565 52.227 158.0 0.24 0.47
COMBUSTOR          0   10      3   5
41.207     167.357 2812    596.2( 802) 1.3000 26.638 2612
41.207      17.559 1624    230.6( 439) 1.3435 26.638 2018 2.120 4277 2.048 0.79712 16.232 0.0795   2516 52.988 155.0 0.24 0.19
COMBUSTOR          0   11      4   3
41.500     139.352 2854    593.3( 815) 1.2961 26.691 2627
41.500      20.147 1791    263.7( 488) 1.3353 26.692 2111 1.924 4061 2.065 0.78687 16.232 0.0805   2464 49.786 151.8
                                                                                                                        0.24 0.23
COMBUSTOR          0   12      5   4
42.460      96.703 2745    582.3( 781) 1.3025 26.613 2565
42.460      24.724 1979    343.5( 545) 1.3288 26.613 2216 1.560 3457 2.082 0.74382 16.232 0.0852   2284 39.957 140.7 0.24 0.17
COMBUSTOR          0   13      6  21
42.692      85.227 2545    591.9( 782) 1.3134 24.291 2615
42.692      25.369 1890    373.4( 565) 1.3365 24.291 2274 1.454 3306 2.216 0.74260 16.357 0.0860   2240 38.157 136.9 0.50 0.05
COMBUSTOR          0   14      7  21
42.702      89.582 2446    591.6( 750) 1.3179 24.199 2573
42.702      25.397 1789    374.0( 533) 1.3415 24.199 2221 1.486 3301 2.200 0.74196 16.357 0.0861   2238 38.058 136.6 0.50 0.01
COMBUSTOR          0   15      8  21
42.767      88.386 2429    590.9( 745) 1.3186 24.186 2566
42.767      25.578 1785    377.6( 532) 1.3419 24.186 2219 1.472 3267 2.199 0.74019 16.357 0.0863   2226 37.575 136.1 0.50 0.00
COMBUSTOR          0   16      9  21
44.310      65.175 2359    567.8( 721) 1.3210 24.184 2531
44.310      41.975 2117    487.0( 641) 1.3294 24.184 2405 0.836 2012 2.214 0.68278 16.357 0.0935   2028 21.346 124.0 0.50 0.00
COMBUSTOR          0   17     10  21
44.800      58.407 3330    560.0(1039) 1.2754 25.165 2897
44.800      47.183 3179    505.2( 986) 1.2807 25.166 2836 0.564 1657 2.308 0.67559 16.357 0.0945   1985 17.393 121.3 0.50 0.45
COMBUSTOR          0   18     11  21
45.487      61.537 2455    549.1( 751) 1.3159 24.325 2570
45.487      49.207 2326    505.5( 708) 1.3203 24.325 2506 0.590 1478 2.229 0.67149 16.357 0.0951   1950 15.426 119.2 0.50 0.07
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	P	T	H	GAMMA	MOLWT	CONV	MACH	VEL	S	*/A	W	A/AC	PUNIM	G	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 21														
46.192	59.274	2294	546.3(739)	1.3243	22.645	2572											
46.192	43.828	2130	490.3(682)	1.3301	22.645	2483	0.686	1705	2.316	0.65705	16.449	0.0977	1969	17.407	119.7	0.69	0.03
COMBUSTOR	0	20	13 21														
46.202	59.817	2222	548.2(715)	1.3277	22.783	2537											
46.202	43.752	2056	489.9(657)	1.3336	22.783	2446	0.698	1708	2.305	0.65627	16.449	0.0979	1970	17.425	119.8	0.69	0.00
COMBUSTOR	0	21	14 21														
46.250	57.712	2209	556.7(756)	1.3297	21.384	2613											
46.250	43.386	2058	500.2(699)	1.3352	21.384	2527	0.666	1682	2.424	0.65878	16.558	0.0981	1956	17.223	118.1	0.92	0.02
COMBUSTOR	0	22	15 21														
46.260	58.140	2148	556.6(734)	1.3325	21.335	2583											
46.260	43.310	1995	499.8(677)	1.3381	21.335	2494	0.676	1686	2.414	0.65650	16.556	0.0982	1957	17.254	118.2	0.92	0.00
COMBUSTOR	0	23	16 21														
47.310	56.732	2098	541.1(715)	1.3345	21.328	2554											
47.310	35.298	1860	453.7(628)	1.3434	21.328	2414	0.866	2092	2.408	0.61027	16.558	0.1059	2034	19.837	122.9	0.92	0.00
COMBUSTOR	0	24	17 3														
48.110	56.973	2073	529.6(706)	1.3353	21.333	2540											
48.110	32.598	1799	429.1(606)	1.3458	21.333	2376	0.944	2243	2.403	0.56104	16.558	0.1152	2116	19.556	127.8	0.92	0.00
COMBUSTOR	0	25	18 4														
48.727	54.063	2259	520.9(772)	1.3262	21.501	2632											
48.727	29.975	1951	406.3(658)	1.3376	21.501	2456	0.975	2394	2.435	0.51190	16.558	0.1263	2202	19.047	133.0	0.92	0.06
COMBUSTOR	0	26	19 5														
50.177	49.648	2515	503.6(864)	1.3139	21.749	2748											
50.177	18.117	1965	298.2(659)	1.3337	21.749	2448	1.310	3206	2.473	0.41600	16.558	0.1554	2371	20.730	143.2	0.92	0.14
COMBUSTOR	0	27	20 4														
50.707	51.279	2443	498.9(837)	1.3170	21.700	2715											
50.707	13.783	1764	247.6(587)	1.3425	21.700	2329	1.522	3546	2.461	0.38906	16.558	0.1662	2411	21.438	145.6	0.92	0.12
COMBUSTOR	0	28	21 4														
52.117	48.120	2520	488.0(865)	1.3132	21.787	2748											
52.117	10.800	1742	200.3(578)	1.3423	21.787	2310	1.643	3794	2.475	0.33159	16.558	0.1950	2492	19.552	150.5	0.92	0.15
COMBUSTOR	0	29	22 4														
54.217	44.603	2573	473.0(887)	1.3103	21.781	2774											
54.217	8.025	1686	143.7(559)	1.3439	21.781	2274	1.785	4059	2.494	0.27235	16.594	0.2379	2582	17.179	155.6	0.93	0.17
COMBUSTOR	0	30	23 4														
54.717	40.569	2696	470.1(932)	1.3045	21.893	2826											
54.717	8.533	1847	151.6(615)	1.3356	21.894	2367	1.686	3992	2.515	0.26122	16.594	0.2480	2601	16.205	156.7	0.93	0.21
COMBUSTOR	0	31	24 4														
55.467	43.843	2586	466.0(891)	1.3095	21.808	2778											
55.467	6.754	1629	111.9(538)	1.3462	21.808	2236	1.882	4209	2.496	0.24624	16.594	0.2631	2626	16.108	158.3	0.93	0.18
COMBUSTOR	0	32	25 4														
55.760	46.223	2526	464.4(869)	1.3122	21.761	2752											
55.760	6.058	1522	95.3(501)	1.3520	21.761	2168	1.982	4298	2.485	0.24088	16.594	0.2690	2634	16.089	158.7	0.93	0.17
COMBUSTOR	0	33	26 4														
56.227	47.961	2420	462.1(831)	1.3170	21.677	2704											
56.227	3.756	1265	43.9(413)	1.3663	21.677	1991	2.297	4575	2.469	0.19050	16.594	0.3401	2687	13.543	161.9	0.93	0.14
COMBUSTOR	0	34	27 5														
57.652	31.229	2837	455.6(982)	1.2975	22.048	2881											
57.652	5.328	1856	86.1(615)	1.3332	22.049	2362	1.820	4300	2.550	0.17614	16.594	0.3678	2720	11.771	163.4	0.93	0.26
COMBUSTOR	0	35	28 3														
57.847	30.575	2863	454.9(992)	1.2962	22.074	2891											
57.847	5.380	1890	87.3(627)	1.3315	22.074	2381	1.801	4289	2.555	0.17435	16.594	0.3716	2724	11.620	164.2	0.93	0.27
COMBUSTOR	0	36	29 7														
57.927	31.111	2860	454.5(991)	1.2964	22.071	2890											
57.927	5.401	1881	85.1(624)	1.3319	22.072	2376	1.810	4300	2.553	0.17630	16.594	0.3675	2726	11.780	164.3	0.93	0.27
COMBUSTOR	0	37	30 3														
58.207	30.781	2888	453.5(1001)	1.2951	22.099	2901											
58.207	5.475	1910	84.8(635)	1.3302	22.099	2393	1.795	4295	2.556	0.17572	16.594	0.3687	2732	11.726	164.7	0.93	0.27

ORIGINAL PAGE IS
OF POOR QUALITY

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READING = 0092  BLOCK = 121  TIME = 227.367  MACH  7.3  PT = 997.999  TT = 2843.3                                          PAGE  3

                P       T      H             GAMMA  MOLWT BONV  MACH  VEL    S     W/A       W      A/AC    MOMIM   G      IVAC  PHI  ETAC
COMBUSTOR          0   38   31   4
58.433     35.069 2735  452.7( 945) 1.3022 21.965 2839
58.433      4.613 1667   55.3( 549) 1.3425 21.966 2251 1.981 4459 2.530 0.17535 16.594 0.3695   2736 12.152 164.9 0.93 0.23
COMBUSTOR          0   39   32  11
59.157    100.076 2153  450.3( 734) 1.3292 21.483 2573
59.157      1.850  741  -44.0( 240) 1.3924 21.483 1545 3.219 4974 2.565 0.17268 16.594 0.3753   2743 13.348 165.3 0.93 0.08
COMBUSTOR          0   40   33   7
60.177     24.556 3356  447.3(1175) 1.2714 22.544 3067
60.177      8.050 2620  154.7( 890) 1.2980 22.549 2738 1.397 3826 2.611 0.17153 16.594 0.3727   2752 10.200 165.9 0.93 0.41
COMBUSTOR          0   41   34   5
62.187     29.540 3019  441.7(1049) 1.2884 22.244 2949
62.187      6.087 2087   84.5( 696) 1.3214 22.245 2483 1.703 4227 2.570 0.17750 16.594 0.3650   2749 11.661 165.7 0.93 0.32
COMBUSTOR          0   42   35   3
63.607     29.942 3031  437.5(1053) 1.2878 22.264 2952
63.607      6.362 2112   85.1( 705) 1.3202 22.265 2495 1.683 4200 2.569 0.18232 16.594 0.3553   2745 11.899 165.4 0.93 0.32
COMBUSTOR          0   43   36   5
66.071     23.510 3478  429.0(1220) 1.2640 22.705 3103
66.071      9.475 2898  177.6( 977) 1.2875 22.713 2838 1.250 3547 2.621 0.17281 16.594 0.3749   2739  9.525 165.1 0.93 0.46
COMBUSTOR          0   44   37   4
66.447     21.400 3564  427.6(1253) 1.2585 22.793 3128
66.447      9.949 3031  207.8(1042) 1.2799 22.803 2908 1.140 3316 2.630 0.16066 16.594 0.4032   2738  8.280 165.0 0.93 0.48
COMBUSTOR  REGEN  45   38   21
66.447     21.400 3870  563.1(1376) 1.2423 22.778 3240
66.447      9.306 3269  304.2(1135) 1.2700 22.800 3009 1.196 3599 2.670 0.16066 16.594 0.4032   2818  8.987 169.8 0.93 0.48
NOZZLE  AE        46   39    5
88.683     21.400 3564  427.6(1240) 1.2585 22.793 3128
88.683      0.597 1532 -348.6( 490) 1.3398 22.806 2115 2.946 6232 2.634 0.03344 16.594 1.9371   3091  3.239 210.4 0.93 0.48
NOZZLE  PO        47   40    5
88.683     21.400 3564  427.6(1240) 1.2585 22.793 3128
88.683      0.156 1100 -493.3( 345) 1.3642 22.806 1808 3.794 6780 2.634 0.01422 16.594 4.5550   3603  1.500 222.0 0.93 0.48
NOZZLE  AE REGEN  48   41    5
88.683     21.400 3870  563.1(1376) 1.2423 22.775 3240
88.683      0.600 1739 -276.6( 562) 1.3293 22.805 2245 2.880 6482 2.670 0.03344 16.594 1.9371   3645  3.169 219.7 0.93 0.48
NOZZLE  PO REGEN  49   42    5
88.683     21.400 3870  563.1(1376) 1.2423 22.775 3240
88.683      0.156 1229 -450.9( 388) 1.3569 22.806 1906 3.737 7123 2.670 0.01336 16.594 4.8499   3860  1.479 233.1 0.93 0.48
FICTIVE COMBUSTR  65   58    0
66.447    355.033 5100  427.6(1845) 1.1790 24.434 3498
66.447      0.156  993-1253.5( 295) 1.3538 24.154 1643 5.562 9172 2.447 0.02310 16.594 2.8046   4842  3.292 291.8 0.93 1.00
FICTIVE NOZZLE    66   59    0
88.683     15.899 3490  396.3(1223) 1.2611 22.795 3098
88.683      0.638 1665 -102.4( 536) 1.3329 22.806 2200 2.600 5913 2.051 0.03344 16.594 1.9371   3366  3.073 202.9 0.93 0.48
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XABS	P-IB	P-OB	PDA	QUX	Q-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PIO	P-OB/PSO	P-OB/PIO
6.981E-01	6.050E-01	0.000	-2.707E-01	0.000	0.000	0.000	2.470E-02	3.876E 00	6.062E-04	0.000	0.000
1.836E 01	6.050E-01	0.000	-2.016E 01	0.000	0.000	0.000	1.634E 02	3.876E 00	6.062E-04	0.000	0.000
3.070E 01	1.075E 00	0.000	-8.826E 01	0.000	0.000	0.000	5.053E 02	6.886E 00	1.077E-03	0.000	0.000
3.508E 01	1.991E 00	0.000	-1.876E 02	0.000	0.000	0.000	6.804E 02	1.270E 01	1.995E-03	0.000	0.000
3.555E 01	2.270E 00	0.000	-2.070E 02	0.000	0.000	0.000	7.013E 02	1.454E 01	2.275E-03	0.000	0.000
3.606E 01	2.165E 00	0.000	-2.296E 02	-2.191E 02	-2.191E 02	0.000	7.246E 02	1.387E 01	2.169E-03	0.000	0.000
3.648E 01	2.362E 00	0.000	-2.489E 02	-2.244E 02	-2.244E 02	0.000	7.443E 02	1.513E 01	2.367E-03	0.000	0.000
3.658E 01	2.361E 00	3.150E 00	-2.866E 02	-2.258E 02	-2.258E 02	0.000	7.492E 02	1.512E 01	2.366E-03	2.018E 01	3.156E-03
3.659E 01	2.361E 00	3.168E 00	-2.867E 02	-2.259E 02	-2.259E 02	0.000	7.495E 02	1.512E 01	2.366E-03	2.029E 01	3.174E-03
3.701E 01	2.355E 00	4.431E 00	-2.869E 02	-2.315E 02	-2.315E 02	0.000	7.930E 02	1.509E 01	2.360E-03	2.838E 01	4.439E-03
3.726E 01	2.267E 00	5.175E 00	-2.881E 02	-2.348E 02	-2.348E 02	0.000	8.169E 02	1.452E 01	2.271E-03	3.315E 01	5.185E-03
3.803E 01	1.990E 00	8.762E 00	-2.689E 02	-2.462E 02	-2.462E 02	0.000	9.021E 02	1.275E 01	1.994E-03	5.613E 01	8.780E-03
3.872E 01	6.392E 00	1.195E 01	-2.635E 02	-3.144E 02	-2.644E 02	-4.998E 01	9.786E 02	4.095E 01	6.405E-03	7.655E 01	1.197E-02
3.875E 01	6.604E 00	1.184E 01	-2.638E 02	-3.172E 02	-2.657E 02	-5.151E 01	9.824E 02	4.230E 01	6.617E-03	7.582E 01	1.186E-02
3.901E 01	8.270E 00	1.094E 01	-2.677E 02	-3.407E 02	-2.772E 02	-6.351E 01	1.012E 03	5.298E 01	8.287E-03	7.009E 01	1.096E-02
3.950E 01	1.170E 01	9.254E 00	-2.850E 02	-3.924E 02	-3.064E 02	-8.604E 01	1.068E 03	7.495E 01	1.172E-02	5.928E 01	9.272E-03
3.974E 01	1.132E 01	8.437E 00	-2.940E 02	-4.211E 02	-3.242E 02	-9.691E 01	1.095E 03	7.252E 01	1.134E-02	5.405E 01	8.454E-03
4.000E 01	1.090E 01	8.067E 00	-3.015E 02	-4.563E 02	-3.474E 02	-1.089E 02	1.126E 03	6.982E 01	1.092E-02	5.167E 01	8.083E-03
4.021E 01	1.451E 01	7.775E 00	-3.098E 02	-4.857E 02	-3.673E 02	-1.184E 02	1.150E 03	9.294E 01	1.454E-02	4.981E 01	7.791E-03
4.040E 01	1.787E 01	1.292E 01	-3.178E 02	-5.137E 02	-3.865E 02	-1.272E 02	1.172E 03	1.145E 02	1.791E-02	8.276E 01	1.295E-02
4.041E 01	1.805E 01	1.319E 01	-3.181E 02	-5.152E 02	-3.876E 02	-1.276E 02	1.173E 03	1.156E 02	1.808E-02	8.446E 01	1.321E-02
4.072E 01	2.340E 01	2.137E 01	-3.258E 02	-5.607E 02	-4.192E 02	-1.415E 02	1.209E 03	1.499E 02	2.345E-02	1.369E 02	2.141E-02
4.121E 01	3.194E 01	3.175E 00	-3.666E 02	-6.361E 02	-4.726E 02	-1.634E 02	1.267E 03	2.046E 02	3.201E-02	2.034E 01	3.181E-03
4.150E 01	3.705E 01	3.245E 00	-4.138E 02	-6.827E 02	-5.065E 02	-1.762E 02	1.302E 03	2.373E 02	3.712E-02	2.079E 01	3.251E-03
4.246E 01	4.597E 01	3.474E 00	-5.795E 02	-8.625E 02	-6.236E 02	-2.390E 02	1.416E 03	2.945E 02	4.607E-02	2.225E 01	3.481E-03
4.269E 01	4.721E 01	3.529E 00	-6.199E 02	-9.130E 02	-6.526E 02	-2.603E 02	1.443E 03	3.024E 02	4.730E-02	2.261E 01	3.536E-03
4.270E 01	4.726E 01	3.531E 00	-6.216E 02	-9.152E 02	-6.539E 02	-2.613E 02	1.445E 03	3.028E 02	4.736E-02	2.262E 01	3.538E-03
4.277E 01	4.761E 01	3.547E 00	-6.328E 02	-9.297E 02	-6.620E 02	-2.677E 02	1.452E 03	3.050E 02	4.770E-02	2.272E 01	3.554E-03
4.431E 01	5.582E 01	2.813E 01	-8.139E 02	-1.306E 03	-8.480E 02	-4.579E 02	1.638E 03	3.576E 02	5.593E-02	1.802E 02	2.819E-02
4.480E 01	5.842E 01	3.594E 01	-8.539E 02	-1.434E 03	-9.047E 02	-5.296E 02	1.698E 03	3.743E 02	5.854E-02	2.302E 02	3.601E-02
4.549E 01	5.153E 01	4.689E 01	-8.834E 02	-1.612E 03	-9.818E 02	-6.304E 02	1.782E 03	3.301E 02	5.163E-02	3.004E 02	4.698E-02
4.619E 01	4.445E 01	4.321E 01	-8.596E 02	-1.791E 03	-1.058E 03	-7.331E 02	1.868E 03	2.847E 02	4.454E-02	2.768E 02	4.329E-02
4.620E 01	4.435E 01	4.316E 01	-8.582E 02	-1.793E 03	-1.059E 03	-7.345E 02	1.869E 03	2.841E 02	4.444E-02	2.764E 02	4.324E-02
4.625E 01	4.387E 01	4.290E 01	-8.556E 02	-1.805E 03	-1.064E 03	-7.414E 02	1.875E 03	2.810E 02	4.396E-02	2.748E 02	4.299E-02
4.626E 01	4.377E 01	4.285E 01	-8.550E 02	-1.808E 03	-1.065E 03	-7.428E 02	1.876E 03	2.804E 02	4.385E-02	2.745E 02	4.294E-02
4.731E 01	3.322E 01	3.737E 01	-7.699E 02	-2.064E 03	-1.172E 03	-8.924E 02	2.006E 03	2.128E 02	3.329E-02	2.394E 02	3.745E-02
4.811E 01	3.200E 01	3.320E 01	-6.817E 02	-2.255E 03	-1.249E 03	-1.005E 03	2.105E 03	2.050E 02	3.206E-02	2.126E 02	3.326E-02
4.873E 01	2.997E 01	2.997E 01	-5.920E 02	-2.399E 03	-1.306E 03	-1.093E 03	2.182E 03	1.920E 02	3.004E-02	1.920E 02	3.004E-02
5.018E 01	1.812E 01	1.812E 01	-4.122E 02	-2.685E 03	-1.431E 03	-1.253E 03	2.363E 03	1.161E 02	1.815E-02	1.161E 02	1.815E-02
5.071E 01	1.378E 01	1.378E 01	-3.682E 02	-2.764E 03	-1.474E 03	-1.289E 03	2.429E 03	8.829E 01	1.381E-02	8.829E 01	1.381E-02
5.212E 01	1.080E 01	1.080E 01	-2.773E 02	-2.945E 03	-1.580E 03	-1.365E 03	2.607E 03	6.918E 01	1.082E-02	6.918E 01	1.082E-02
5.422E 01	8.025E 00	8.025E 00	-1.736E 02	-3.173E 03	-1.716E 03	-1.457E 03	2.873E 03	5.141E 01	8.041E-03	5.141E 01	8.041E-03
5.472E 01	8.533E 00	8.533E 00	-1.521E 02	-3.221E 03	-1.744E 03	-1.476E 03	2.937E 03	5.466E 01	8.550E-03	5.466E 01	8.550E-03
5.547E 01	6.754E 00	6.754E 00	-1.225E 02	-3.289E 03	-1.785E 03	-1.504E 03	3.033E 03	4.326E 01	6.767E-03	4.326E 01	6.767E-03
5.576E 01	6.058E 00	6.058E 00	-1.129E 02	-3.314E 03	-1.799E 03	-1.515E 03	3.070E 03	3.881E 01	6.070E-03	3.881E 01	6.070E-03
5.623E 01	2.562E 00	4.950E 00	-5.916E 01	-3.355E 03	-1.822E 03	-1.531E 03	3.102E 03	1.641E 01	2.568E-03	3.171E 01	4.960E-03
5.765E 01	5.328E 00	5.328E 00	-2.259E 01	-3.460E 03	-1.884E 03	-1.576E 03	3.210E 03	3.413E 01	5.339E-03	3.413E 01	5.339E-03
5.785E 01	5.380E 00	5.380E 00	-1.758E 01	-3.473E 03	-1.892E 03	-1.582E 03	3.234E 03	3.446E 01	5.390E-03	3.446E 01	5.390E-03
5.793E 01	5.401E 00	5.401E 00	-1.541E 01	-3.479E 03	-1.895E 03	-1.584E 03	3.245E 03	3.460E 01	5.412E-03	3.460E 01	5.412E-03
5.821E 01	5.475E 00	5.475E 00	-8.313E 00	-3.496E 03	-1.905E 03	-1.591E 03	3.280E 03	3.507E 01	5.486E-03	3.507E 01	5.486E-03
5.843E 01	4.613E 00	4.613E 00	-3.406E 00	-3.510E 03	-1.913E 03	-1.597E 03	3.309E 03	2.955E 01	4.622E-03	2.955E 01	4.622E-03
5.916E 01	1.850E 00	1.850E 00	5.355E 00	-3.548E 03	-1.936E 03	-1.612E 03	3.402E 03	1.185E 01	1.854E-03	1.185E 01	1.854E-03
6.018E 01	8.050E 00	8.050E 00	1.682E 01	-3.599E 03	-1.964E 03	-1.635E 03	3.532E 03	5.157E 01	8.066E-03	5.157E 01	8.066E-03
6.219E 01	6.087E 00	6.087E 00	1.847E 01	-3.693E 03	-2.005E 03	-1.687E 03	3.790E 03	3.900E 01	6.100E-03	3.900E 01	6.100E-03
6.361E 01	6.362E 00	6.362E 00	1.847E 01	-3.761E 03	-2.031E 03	-1.730E 03	3.972E 03	4.076E 01	6.375E-03	4.076E 01	6.375E-03
6.607E 01	9.475E 00	9.475E 00	1.847E 01	-3.902E 03	-2.089E 03	-1.814E 03	4.289E 03	6.069E 01	9.493E-03	6.069E 01	9.493E-03

XABS	P-16	P-06	HOA	QOX	Q-IP	Q-HE	CWALL	P-16/PSO	P-16/P10	P-06/PSO	P-06/P10
6.645E 01	9.949E 00	9.949E 00	1.847E 01	-3.926E 03	-2.099E 03	-1.828E 03	4.337E 03	6.373E 01	9.969E-03	6.373E 01	9.969E-03
6.669E 01	5.124E 00	1.025E 01	1.847E 01	-3.942E 03	-2.105E 03	-1.836E 03	4.308E 03	5.282E 01	5.154E-03	6.560E 01	1.027E-02
6.835E 01	5.530E 00	5.460E 00	9.503E 01	-4.038E 03	-2.143E 03	-1.895E 03	4.584E 03	5.542E 01	5.541E-03	5.498E 01	5.471E-03
6.902E 01	4.181E 00	8.550E-01	1.763E 02	-4.074E 03	-2.155E 03	-1.919E 03	4.665E 03	2.678E 01	4.189E-03	5.477E 00	8.567E-04
6.979E 01	2.630E 00	1.535E 00	2.451E 02	-4.115E 03	-2.166E 03	-1.949E 03	4.760E 03	1.685E 01	2.635E-03	9.830E 00	1.538E-03
7.051E 01	1.918E 00	2.170E 00	3.000E 02	-4.153E 03	-2.175E 03	-1.978E 03	4.848E 03	1.229E 01	1.922E-03	1.390E 01	2.174E-03
7.112E 01	1.315E 00	1.953E 00	3.397E 02	-4.163E 03	-2.182E 03	-2.002E 03	4.922E 03	8.424E 00	1.318E-03	1.251E 01	1.957E-03
7.250E 01	1.195E 00	1.463E 00	4.070E 02	-4.236E 03	-2.194E 03	-2.042E 03	5.086E 03	7.655E 00	1.197E-03	9.374E 00	1.466E-03
7.403E 01	1.038E 00	9.200E-01	4.623E 02	-4.278E 03	-2.206E 03	-2.072E 03	5.273E 03	6.651E 00	1.040E-03	5.893E 00	9.218E-04
7.493E 01	9.458E-01	5.990E-01	4.965E 02	-4.302E 03	-2.212E 03	-2.089E 03	5.370E 03	6.058E 00	9.477E-04	3.837E 00	6.002E-04
7.626E 01	8.100E-01	0.000	5.150E 02	-4.341E 03	-2.222E 03	-2.119E 03	5.422E 03	5.189E 00	8.116E-04	0.000	0.000
7.911E 01	1.395E 00	0.000	5.591E 02	-4.360E 03	-2.240E 03	-2.119E 03	5.520E 03	8.936E 00	1.398E-03	0.000	0.000
8.301E 01	1.280E 00	0.000	6.163E 02	-4.383E 03	-2.264E 03	-2.119E 03	5.625E 03	8.199E 00	1.283E-03	0.000	0.000
8.582E 01	1.150E 00	0.000	6.433E 02	-4.406E 03	-2.287E 03	-2.119E 03	5.679E 03	7.367E 00	1.152E-03	0.000	0.000
8.868E 01	1.210E 00	0.000	6.717E 02	-4.446E 03	-2.326E 03	-2.119E 03	5.702E 03	7.751E 00	1.212E-03	0.000	0.000
8.868E 01	1.210E 00	0.000	6.717E 02	-4.446E 03	-2.326E 03	-2.119E 03	5.702E 03	7.752E 00	1.213E-03	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.415E 01	8.415E 01	2.088E-03	3.366E-02
4.041E 01	1.632E-01	8.431E 01	2.784E-03	4.294E-02
4.072E 01	5.162E 00	8.948E 01	2.539E-03	5.853E-02
4.121E 01	8.137E 00	9.761E 01	2.831E-03	4.574E-02
4.150E 01	4.885E 00	1.025E 02	2.665E-03	5.205E-02
4.246E 01	1.434E 01	1.168E 02	2.937E-03	5.202E-02
4.269E 01	3.378E 00	1.202E 02	3.309E-03	4.866E-02
4.270E 01	1.390E-01	1.204E 02	2.917E-03	5.529E-02
4.277E 01	8.514E-01	1.212E 02	2.859E-03	5.630E-02
4.431E 01	1.649E 01	1.377E 02	3.164E-03	5.494E-02
4.480E 01	3.708E 00	1.414E 02	3.263E-03	5.145E-02
4.549E 01	4.854E 00	1.463E 02	3.795E-03	4.080E-02
4.619E 01	5.197E 00	1.515E 02	3.535E-03	4.631E-02
4.620E 01	7.189E-02	1.515E 02	3.281E-03	5.001E-02
4.625E 01	3.460E-01	1.519E 02	3.512E-03	4.758E-02
4.626E 01	7.248E-02	1.520E 02	3.265E-03	5.162E-02
4.731E 01	7.660E 00	1.596E 02	3.093E-03	5.311E-02
4.811E 01	5.941E 00	1.656E 02	2.993E-03	5.265E-02
4.873E 01	4.371E 00	1.699E 02	2.906E-03	5.148E-02
5.018E 01	1.024E 01	1.802E 02	2.780E-03	4.146E-02
5.071E 01	3.992E 00	1.842E 02	2.916E-03	3.366E-02
5.212E 01	1.031E 01	1.945E 02	2.752E-03	2.925E-02
5.422E 01	1.339E 01	2.079E 02	2.725E-03	2.323E-02
5.472E 01	2.923E 00	2.108E 02	2.772E-03	2.354E-02
5.547E 01	4.324E 00	2.151E 02	2.814E-03	1.970E-02
5.576E 01	1.668E 00	2.168E 02	2.709E-03	1.879E-02
5.623E 01	1.225E 00	2.180E 02	2.543E-03	1.314E-02
5.765E 01	3.414E 00	2.214E 02	2.467E-03	1.676E-02
5.785E 01	7.684E-01	2.222E 02	2.828E-03	1.516E-02
5.793E 01	3.670E-01	2.225E 02	3.301E-03	1.323E-02
5.821E 01	1.285E 00	2.238E 02	2.828E-03	1.529E-02
5.843E 01	9.725E-01	2.248E 02	2.822E-03	1.366E-02
5.916E 01	3.255E 00	2.281E 02	2.692E-03	7.443E-03
6.018E 01	3.896E 00	2.320E 02	2.372E-03	2.230E-02
6.219E 01	7.715E 00	2.397E 02	3.101E-03	1.489E-02
6.361E 01	6.435E 00	2.461E 02	2.896E-03	1.631E-02
6.607E 01	1.003E 01	2.561E 02	3.028E-03	1.937E-02
6.645E 01	1.363E 00	2.575E 02	3.318E-03	1.757E-02
6.669E 01	8.717E-01	2.584E 02	3.306E-03	1.579E-02
6.835E 01	6.174E 00	2.645E 02	3.222E-03	1.326E-02
6.902E 01	2.014E 00	2.666E 02	3.076E-03	8.137E-03
6.979E 01	1.935E 00	2.685E 02	3.042E-03	7.139E-03
7.051E 01	1.704E 00	2.702E 02	3.035E-03	7.037E-03
7.112E 01	1.350E 00	2.715E 02	2.998E-03	6.013E-03
7.250E 01	2.708E 00	2.743E 02	2.963E-03	5.180E-03
7.403E 01	2.601E 00	2.769E 02	2.908E-03	4.135E-03
7.493E 01	1.166E 00	2.780E 02	2.863E-03	3.462E-03
7.626E 01	5.860E-01	2.786E 02	2.862E-03	3.576E-03
7.911E 01	1.325E 00	2.799E 02	2.933E-03	5.292E-03
8.301E 01	1.591E 00	2.815E 02	2.896E-03	4.933E-03
8.582E 01	7.788E-01	2.823E 02	2.865E-03	4.540E-03
8.868E 01	3.171E-01	2.826E 02	2.861E-03	4.689E-03
8.868E 01	0.000	2.826E 02	2.861E-03	4.689E-03

ORIGINAL PAGE IS
OF POOR QUALITY

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	366.	(LBF)
MEASURED THRUST	1102.	(LBF)
CALCULATED SPECIFIC IMPULSE	864.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	2463.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.2608	
MEASURED THRUST COEFFICIENT	0.7430	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	3515.	(LBF)
NET THRUST	535.	(LBF)
SPECIFIC IMPULSE	1197.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.3612	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.2	(LBF)
INLET MOMENTUM CHANGE	-402.0	(LBF)
COMBUSTOR FRICTION DRAG	173.3	(LBF)
COMBUSTOR STRUT DRAG	-13.38	(LBF)
COMBUSTOR MOMENTUM CHANGE	160.	(LBF)
NOZZLE FRICTION DRAG	25.12	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	628.	(LBF)
NOZZLE PRESSURE INTEGRAL	653.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-741.	(LBF)
TOTAL STRUT DRAG	-13.38	(LBF)
CAVITY FORCE	-1740.	(LBF)
CALCULATED LOAD CELL FORCE	-2094.	(LBF)
MEASURED LOAD CELL FORCE	-1379.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, 0.0, -148.0,

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7070	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.591	(IN)
NOZZLE SHROUD TRAILING EDGE	74.931	(IN)
NOZZLE PLUG TRAILING EDGE	86.683	(IN)
STRUT LEADING EDGE	57.847	(IN)
STRUT TRAILING EDGE	66.447	(IN)
COMBUSTOR EXIT	66.447	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9923	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1033	
DELTA PT2	0.0906	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3557	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1046	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9118	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9159	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9271	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8766	
ENTHALPY AT P0 - SUPERSONIC	-46.29	(BTU/LBM)
ENTHALPY AT P0 - SUBSONIC	-11.49	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0277
EQUIVALENCE RATIO	0.930
COMBUSTOR EFFICIENCY	0.483
TOTAL PRESSURE RATIO	0.0603
COMBUSTOR EFFECTIVENESS	0.4871
INJECTOR DISCHARGE COEFFICIENTS	0.9282, 0.6573, 0.8383, 0.9305

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9644
NOZZLE COEFFICIENT - CT	0.8929
PROCESS EFFICIENCY	0.9486
KINETIC ENERGY EFFICIENCY	0.9222

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.692	B
1C	44.300	
2A	50.167	
2C	46.250	E
3A	55.457	
3M	57.642	
4	46.192	C

Reading 92

t = 248.07 sec.

92/144

RAMJET PERFORMANCE

S U M M A R Y   R E P O R T

X	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	-	A/AC	MOMTM	G	ISAC	PHI	ETAC
WIND TUNNEL		1	0 5														
0.000	998.499	2852	626.0(752)	1.2980	28.881	2525											
0.000	0.156	271	-64.2(65)	1.3953	28.880	807	7.287	5677	1.793	0.06326	16.074	0.9920	2976	5.778	185.1		
SPIKE TIP NS		2	0 6														
0.600	11.175	2852	626.0(752)	1.2980	28.880	2525											
0.600	10.235	2795	608.9(736)	1.2998	28.880	2501	0.370	924	2.102	0.06326	16.074	0.9920	3062	0.909	190.5		
WIND TUNNEL		3	0 0														
0.000	998.499	2852	626.0(752)	1.2980	28.881	2525											
0.000	0.164	275	-63.3(66)	1.3954	28.880	812	7.231	5873	1.793	0.06549	16.640	0.9920	3079	5.977	185.0		
SPIKE TIP NS		4	0 0														
0.600	11.175	2852	626.0(752)	1.2980	28.880	2525											
0.600	10.159	2790	607.4(734)	1.3000	28.880	2499	0.385	962	2.102	0.06549	16.640	0.9920	3079	0.980	185.0		
INLET THROAT		5	0 3														
40.400	371.020	2747	594.6(722)	1.3014	28.881	2461											
40.400	9.774	1101	138.8(268)	1.3729	28.880	1613	2.961	4776	1.850	0.79267	16.074	0.0792	2584	58.830	160.8		
INLET UPNRSK		6	0 3														
40.400	371.020	2747	594.6(722)	1.3014	28.881	2461											
40.400	8.436	1057	127.9(257)	1.3756	28.880	1582	3.054	4833	1.850	0.72061	16.074	0.0871	2603	54.119	161.9		
INLET DNNRSK		7	0 4														
40.400	104.796	2747	594.6(722)	1.3014	28.881	2481											
40.400	91.565	2662	569.5(697)	1.3041	28.880	2445	0.459	1121	1.937	0.72061	16.074	0.0871	2603	12.554	161.9		
COMBUSTOR		0 8	1 3														
40.410	370.652	2747	594.5(722)	1.3014	28.881	2481											
40.410	9.777	1101	138.9(268)	1.3729	28.880	1613	2.960	4775	1.850	0.79257	16.074	0.0792	2584	58.814	160.7		
COMBUSTOR		0 9	2 3														
40.719	361.135	2741	592.8(720)	1.3016	28.881	2478											
40.719	9.954	1111	141.5(271)	1.3723	28.880	1620	2.933	4752	1.851	0.79545	16.074	0.0789	2575	58.744	160.2		
COMBUSTOR		0 10	3 4														
41.209	329.244	2732	590.1(717)	1.3019	28.881	2474											
41.209	10.328	1146	150.4(280)	1.3701	28.880	1644	2.852	4690	1.856	0.78976	16.074	0.0795	2553	57.565	158.9		
COMBUSTOR		0 11	4 4														
41.500	300.973	2726	588.4(716)	1.3020	28.881	2472											
41.500	10.671	1182	159.5(289)	1.3678	28.880	1668	2.777	4632	1.862	0.78164	16.074	0.0803	2534	56.270	157.6		
COMBUSTOR		0 12	5 4														
42.460	242.250	2700	580.7(708)	1.3029	28.881	2461											
42.460	10.942	1247	176.3(306)	1.3637	28.880	1711	2.629	4498	1.874	0.73759	16.074	0.0851	2466	51.561	154.6		
COMBUSTOR		0 13	6 21														
42.694	133.315	2662	599.7(781)	1.3074	25.642	2598											
42.694	9.166	1364	194.4(378)	1.3595	25.641	1896	2.375	4504	2.106	0.73728	16.234	0.0860	2474	51.601	152.4		
																0.33	0.07
COMBUSTOR		0 14	7 21														
42.704	155.182	2560	599.6(750)	1.3120	25.540	2557											
42.704	9.270	1255	195.4(347)	1.3666	25.540	1827	2.461	4497	2.084	0.73617	16.234	0.0861	2474	51.452	152.4	0.33	0.01
COMBUSTOR		0 15	8 21														
42.769	159.648	2543	598.9(744)	1.3128	25.525	2550											
42.769	9.941	1259	201.5(348)	1.3665	25.525	1831	2.436	4460	2.079	0.73496	16.234	0.0862	2470	50.936	152.1	0.33	0.00
COMBUSTOR		0 16	9 6														
44.310	80.039	3299	580.0(980)	1.2768	26.375	2818											
44.310	30.000	2796	409.3(814)	1.2940	26.376	2611	1.119	2923	2.192	0.67811	16.234	0.0935	2385	30.801	146.9	0.33	0.52
COMBUSTOR		0 17	10 4														
44.800	77.622	3199	573.5(948)	1.2814	26.286	2764											
44.800	46.922	2859	456.4(836)	1.2929	26.288	2644	0.908	2400	2.188	0.67014	16.234	0.0946	2348	25.000	144.6	0.33	0.47
COMBUSTOR		0 18	11 4														
45.489	76.593	3036	564.2(896)	1.2888	26.140	2728											
45.489	49.647	2752	468.9(803)	1.2983	26.141	2607	0.838	2185	2.176	0.66670	16.234	0.0951	2311	22.635	142.4	0.33	0.38

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	*	A/AC	MOMIM	G	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 6														
46.194	74.380	2765	563.6(892)	1.3030	23.478	2762											
46.194	45.327	2461	454.1(784)	1.3132	23.478	2616	0.895	2340	2.331	0.65491	16.386	0.0977	2326	23.815	141.9	0.64	0.17
COMBUSTOR	0	20	13 2														
46.204	74.332	2769	563.4(893)	1.3028	23.482	2764											
46.204	45.266	2464	453.7(785)	1.3131	23.482	2617	0.895	2343	2.331	0.65412	16.386	0.0978	2327	23.817	142.0	0.64	0.18
COMBUSTOR	0	21	14 8														
46.250	73.535	2472	577.6(852)	1.3151	21.538	2743											
46.250	44.984	2192	472.0(747)	1.3278	21.538	2592	0.867	2299	2.441	0.65745	16.514	0.0981	2310	23.490	139.9	0.90	0.07
COMBUSTOR	0	22	15 2														
46.260	73.492	2473	577.5(852)	1.3180	21.539	2743											
46.260	44.923	2193	471.7(747)	1.3278	21.539	2593	0.888	2301	2.441	0.65703	16.514	0.0981	2310	23.497	139.9	0.90	0.07
COMBUSTOR	0	23	16 4														
47.310	69.889	2676	561.0(925)	1.3082	21.744	2829											
47.310	38.490	2320	425.1(791)	1.3204	21.745	2647	0.986	2608	2.467	0.60892	16.514	0.1059	2383	24.683	144.3	0.90	0.14
COMBUSTOR	0	24	17 4														
48.110	66.534	2874	548.0(998)	1.2987	21.945	2908											
48.110	37.929	2520	410.9(862)	1.3106	21.945	2736	0.957	2619	2.490	0.55974	16.514	0.1152	2463	22.783	149.2	0.90	0.20
COMBUSTOR	0	25	18 4														
48.729	62.988	3117	537.9(1087)	1.2870	22.185	2999											
48.729	33.350	2698	372.5(925)	1.3012	22.186	2805	1.026	2877	2.516	0.51054	16.514	0.1263	2555	22.824	154.7	0.90	0.28
COMBUSTOR	0	26	19 4														
50.179	59.085	3365	518.6(1179)	1.2742	22.459	3081											
50.179	19.765	2636	228.9(896)	1.2995	22.463	2754	1.383	3807	2.538	0.41490	16.514	0.1554	2741	24.546	166.0	0.90	0.36
COMBUSTOR	0	27	20 4														
50.709	62.446	3217	513.6(1123)	1.2815	22.332	3030											
50.709	14.800	2313	161.8(777)	1.3126	22.334	2600	1.614	4196	2.522	0.38803	16.514	0.1662	2783	25.301	168.5	0.90	0.33
COMBUSTOR	0	28	21 4														
52.119	59.839	3264	502.4(1140)	1.2788	22.401	3044											
52.119	11.350	2230	101.0(745)	1.3147	22.404	2551	1.757	4482	2.528	0.33071	16.514	0.1950	2867	23.034	173.6	0.90	0.35
COMBUSTOR	0	29	22 4														
54.219	51.612	3452	487.1(1214)	1.2686	22.528	3109											
54.219	9.475	2362	56.3(793)	1.3071	22.534	2610	1.779	4643	2.560	0.27163	16.549	0.2379	2966	19.600	179.2	0.91	0.41
COMBUSTOR	0	30	23 4														
54.719	50.250	3490	484.1(1229)	1.2665	22.571	3120											
54.719	9.067	2383	45.4(800)	1.3058	22.578	2617	1.790	4686	2.564	0.26053	16.549	0.2480	2986	18.971	180.4	0.91	0.42
COMBUSTOR	0	31	24 4														
55.469	54.413	3351	479.8(1176)	1.2737	22.449	3075											
55.469	7.308	2118	0.1(704)	1.3172	22.453	2486	1.971	4899	2.548	0.24559	16.549	0.2631	3012	18.698	182.0	0.91	0.36
COMBUSTOR	0	32	25 4														
55.760	57.261	3280	478.2(1149)	1.2773	22.385	3050											
55.760	6.625	1992	-18.6(659)	1.3231	22.388	2419	2.061	4986	2.538	0.24028	16.549	0.2689	3021	18.617	182.5	0.91	0.36
COMBUSTOR	0	33	26 4														
56.229	57.109	3196	475.7(1118)	1.2813	22.313	3021											
56.229	4.359	1742	-76.9(571)	1.3346	22.315	2276	2.310	5258	2.531	0.18999	16.549	0.3401	3085	15.526	186.4	0.91	0.34
COMBUSTOR	0	34	27 5														
57.654	40.043	3621	469.1(1278)	1.2582	22.735	3157											
57.654	5.525	2340	-41.1(781)	1.3051	22.747	2584	1.956	5053	2.591	0.17560	16.549	0.3679	3120	13.789	188.5	0.91	0.47
COMBUSTOR	0	35	28 3														
57.849	39.436	3642	468.3(1285)	1.2569	22.758	3162											
57.849	5.525	2365	-41.5(790)	1.3039	22.770	2595	1.946	5051	2.593	0.17385	16.549	0.3717	3124	13.646	188.8	0.91	0.48
COMBUSTOR	0	36	29 8														
57.929	40.294	3632	468.0(1281)	1.2576	22.748	3159											
57.929	5.525	2345	-44.8(783)	1.3048	22.760	2585	1.959	5066	2.590	0.17580	16.549	0.3675	3126	13.840	188.9	0.91	0.47
COMBUSTOR	0	37	30 3														
58.209	40.230	3647	466.9(1287)	1.2567	22.766	3164											
58.209	5.525	2358	-47.6(787)	1.3041	22.778	2591	1.959	5074	2.591	0.17525	16.549	0.3687	3132	13.618	189.2	0.91	0.48

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	MOMIP	C	IVAC	PHI	ETAC
COMBUSTOR	0	38	31 5														
58.435	46.625	3451	466.1(1213)	1.2679	22.576	3104											
58.435	4.669	2043	-82.0(675)	1.3166	22.582	2455	2.150	5237	2.566	0.17489	16.549	0.3695	3135	14.233	189.5	0.91	0.42
COMBUSTOR	0	39	32 18														
59.159	143.085	2746	463.6(950)	1.3021	21.936	2847											
59.159	1.925	912	-196.4(292)	1.3814	21.936	1690	3.401	5747	2.407	0.17217	16.549	0.3753	3141	15.376	189.6	0.91	0.23
COMBUSTOR	0	40	33 7														
60.179	30.600	4224	460.2(1507)	1.2148	23.379	3303											
60.179	7.975	3269	33.5(1123)	1.2615	23.452	2957	1.563	4621	2.642	0.17808	16.549	0.3777	3148	12.285	190.2	0.91	0.67
COMBUSTOR	0	41	34 5														
62.189	35.418	3930	453.5(1394)	1.2378	23.085	3237											
62.189	6.762	2788	-22.3(943)	1.2844	23.117	2775	1.758	4879	2.616	0.17703	16.549	0.3650	3142	13.423	189.8	0.91	0.57
COMBUSTOR	0	42	35 4														
63.609	37.808	3832	448.5(1357)	1.2445	22.997	3211											
63.609	6.531	2643	-39.0(890)	1.2909	23.020	2714	1.820	4939	2.604	0.18183	16.549	0.3553	3135	13.956	189.4	0.91	0.55
COMBUSTOR	0	43	36 5														
66.073	28.828	4352	438.6(1555)	1.2026	23.571	3322											
66.073	9.100	3538	56.3(1225)	1.2459	23.673	3043	1.438	4374	2.648	0.17235	16.549	0.3749	3124	11.716	188.8	0.91	0.73
COMBUSTOR	0	44	37 4														
66.449	25.788	4495	437.0(1610)	1.1878	23.732	3344											
66.449	9.492	3811	90.5(1330)	1.2265	23.877	3120	1.335	4164	2.662	0.16023	16.549	0.4032	3122	10.369	188.7	0.91	0.79
COMBUSTOR REGEN		45	38 2														
66.449	25.788	4691	565.2(1693)	1.1741	23.624	3404											
66.449	10.428	4098	231.8(1447)	1.2054	23.023	3211	1.272	4084	2.690	0.16023	16.549	0.4032	3178	10.170	192.0	0.91	0.79
NOZZLE AE		46	39 5														
88.685	25.788	4495	437.0(1564)	1.1878	23.732	3344											
88.685	0.666	2184	-561.4(704)	1.2969	23.920	2426	2.913	7068	2.662	0.03336	16.549	1.9371	3966	3.664	239.6	0.91	0.79
NOZZLE PO		47	40 5														
88.685	25.788	4495	437.0(1564)	1.1878	23.732	3344											
88.685	0.156	1547	-784.5(481)	1.3270	23.920	2065	3.785	7818	2.662	0.01220	16.549	5.2941	4233	1.483	255.8	0.91	0.79
NOZZLE AE REGEN		48	41 5														
88.685	25.788	4691	565.2(1693)	1.1741	23.624	3404											
88.685	0.711	2391	-485.2(780)	1.2869	23.920	2531	2.864	7250	2.690	0.03336	16.549	1.9371	4082	3.758	246.6	0.91	0.79
NOZZLE PO REGEN		49	42 5														
88.685	25.788	4691	565.2(1693)	1.1741	23.624	3404											
88.685	0.156	1679	-739.6(526)	1.3197	23.920	2146	3.765	8080	2.690	0.01162	16.549	5.5605	4378	1.459	264.6	0.91	0.79
FICTIVE COMBUSTR		65	58 0														
66.449	371.020	5129	437.0(1858)	1.1786	24.432	3507											
66.449	0.156	992	-1260.4(295)	1.3536	24.753	1642	5.612	9216	2.448	0.02322	16.549	2.7632	4852	3.325	293.2	0.91	1.00
FICTIVE NOZZLE		66	59 0														
88.685	18.068	4415	399.6(1577)	1.1881	23.740	3314											
88.685	0.777	2398	-482.9(783)	1.2867	23.920	2534	2.622	6645	2.684	0.03336	16.549	1.9371	3804	3.445	224.9	0.91	0.79

READING = 0092 BLOCK = 144 TIME = 248.067 MACH 7.3 PT = 998.499 TT = 2852.2

XABS	P-IB	P-OB	PDA	QOX	Q-IB	Q-OB	CAWALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.981E-01	6.050E-01	0.000	-2.698E-01	0.000	0.000	0.000	2.470E-02	3.879E 00	6.059E-04	0.000	0.000
1.836E 01	6.050E-01	0.000	-2.016E 01	0.000	0.000	0.000	1.634E 02	3.879E 00	6.059E-04	0.000	0.000
3.070E 01	1.085E 00	0.000	-8.867E 01	0.000	0.000	0.000	5.053E 02	6.956E 00	1.087E-03	0.000	0.000
3.508E 01	1.972E 00	0.000	-1.877E 02	0.000	0.000	0.000	6.804E 02	1.264E 01	1.975E-03	0.000	0.000
3.555E 01	2.260E 00	0.000	-2.070E 02	0.000	0.000	0.000	7.013E 02	1.449E 01	2.263E-03	0.000	0.000
3.606E 01	2.150E 00	0.000	-2.294E 02	-2.677E 02	-2.677E 02	0.000	7.246E 02	1.378E 01	2.153E-03	0.000	0.000
3.648E 01	2.355E 00	0.000	-2.487E 02	-2.742E 02	-2.742E 02	0.000	7.443E 02	1.510E 01	2.359E-03	0.000	0.000
3.659E 01	2.352E 00	3.153E 00	-2.865E 02	-2.759E 02	-2.759E 02	0.000	7.493E 02	1.508E 01	2.356E-03	2.021E 01	3.158E-03
3.659E 01	2.352E 00	3.171E 00	-2.866E 02	-2.760E 02	-2.760E 02	0.000	7.496E 02	1.508E 01	2.355E-03	2.033E 01	3.176E-03
3.701E 01	2.340E 00	4.434E 00	-2.886E 02	-2.827E 02	-2.827E 02	0.000	7.928E 02	1.500E 01	2.344E-03	2.842E 01	4.440E-03
3.726E 01	2.258E 00	5.187E 00	-2.878E 02	-2.869E 02	-2.869E 02	0.000	8.190E 02	1.448E 01	2.262E-03	3.326E 01	5.195E-03
3.803E 01	2.005E 00	8.808E 00	-2.682E 02	-3.006E 02	-3.006E 02	0.000	9.020E 02	1.285E 01	2.008E-03	5.647E 01	8.821E-03
3.872E 01	6.424E 00	1.204E 01	-2.629E 02	-3.666E 02	-3.152E 02	-5.335E 01	9.787E 02	4.118E 01	6.433E-03	7.721E 01	1.206E-02
3.875E 01	6.623E 00	1.193E 01	-2.631E 02	-3.708E 02	-3.160E 02	-5.488E 01	9.822E 02	4.246E 01	6.633E-03	7.651E 01	1.195E-02
3.901E 01	8.290E 00	1.101E 01	-2.670E 02	-3.902E 02	-3.225E 02	-6.769E 01	1.012E 03	5.315E 01	8.302E-03	7.062E 01	1.103E-02
3.950E 01	1.138E 01	9.282E 00	-2.834E 02	-4.283E 02	-3.366E 02	-9.174E 01	1.068E 03	7.294E 01	1.139E-02	5.951E 01	9.296E-03
3.974E 01	1.090E 01	8.437E 00	-2.921E 02	-4.478E 02	-3.443E 02	-1.034E 02	1.095E 03	6.991E 01	1.092E-02	5.409E 01	8.450E-03
4.000E 01	1.039E 01	8.077E 00	-2.984E 02	-4.697E 02	-3.535E 02	-1.162E 02	1.126E 03	6.659E 01	1.040E-02	5.178E 01	8.089E-03
4.021E 01	1.094E 01	7.787E 00	-3.035E 02	-4.876E 02	-3.613E 02	-1.263E 02	1.150E 03	7.013E 01	1.096E-02	4.992E 01	7.799E-03
4.040E 01	1.144E 01	9.033E 00	-3.079E 02	-5.042E 02	-3.686E 02	-1.356E 02	1.172E 03	7.337E 01	1.146E-02	5.791E 01	9.046E-03
4.041E 01	1.147E 01	9.098E 00	-3.080E 02	-5.051E 02	-3.690E 02	-1.361E 02	1.173E 03	7.354E 01	1.149E-02	5.833E 01	9.112E-03
4.072E 01	1.229E 01	1.111E 01	-3.121E 02	-5.325E 02	-3.819E 02	-1.510E 02	1.210E 03	7.877E 01	1.231E-02	7.124E 01	1.113E-02
4.121E 01	1.358E 01	3.350E 00	-3.268E 02	-5.771E 02	-4.027E 02	-1.744E 02	1.267E 03	8.707E 01	1.360E-02	2.148E 01	3.355E-03
4.150E 01	1.435E 01	3.402E 00	-3.422E 02	-6.043E 02	-4.163E 02	-1.880E 02	1.301E 03	9.200E 01	1.437E-02	2.181E 01	3.408E-03
4.246E 01	9.925E 00	3.576E 00	-3.765E 02	-7.278E 02	-4.681E 02	-2.597E 02	1.416E 03	6.363E 01	9.940E-03	2.292E 01	3.581E-03
4.269E 01	1.472E 01	3.618E 00	-3.840E 02	-7.680E 02	-4.825E 02	-2.855E 02	1.444E 03	9.434E 01	1.474E-02	2.319E 01	3.623E-03
4.270E 01	1.492E 01	3.620E 00	-3.844E 02	-7.698E 02	-4.831E 02	-2.867E 02	1.445E 03	9.565E 01	1.494E-02	2.320E 01	3.625E-03
4.277E 01	1.625E 01	3.631E 00	-3.873E 02	-7.817E 02	-4.872E 02	-2.945E 02	1.452E 03	1.042E 02	1.627E-02	2.328E 01	3.637E-03
4.431E 01	4.779E 01	2.821E 01	-4.525E 02	-1.068E 03	-6.018E 02	-4.861E 02	1.638E 03	3.064E 02	4.787E-02	1.808E 02	2.825E-02
4.480E 01	5.782E 01	3.602E 01	-4.839E 02	-1.194E 03	-6.449E 02	-5.486E 02	1.698E 03	3.707E 02	5.791E-02	2.309E 02	3.607E-02
4.549E 01	5.229E 01	4.701E 01	-5.139E 02	-1.344E 03	-7.068E 02	-6.367E 02	1.782E 03	3.352E 02	5.237E-02	3.014E 02	4.708E-02
4.619E 01	4.662E 01	4.403E 01	-4.923E 02	-1.506E 03	-7.683E 02	-7.373E 02	1.868E 03	2.989E 02	4.669E-02	2.823E 02	4.410E-02
4.620E 01	4.654E 01	4.399E 01	-4.908E 02	-1.508E 03	-7.691E 02	-7.389E 02	1.869E 03	2.984E 02	4.661E-02	2.820E 02	4.406E-02
4.625E 01	4.617E 01	4.380E 01	-4.880E 02	-1.519E 03	-7.731E 02	-7.462E 02	1.875E 03	2.960E 02	4.624E-02	2.808E 02	4.386E-02
4.626E 01	4.609E 01	4.376E 01	-4.876E 02	-1.522E 03	-7.739E 02	-7.478E 02	1.876E 03	2.955E 02	4.616E-02	2.805E 02	4.382E-02
4.731E 01	3.765E 01	3.933E 01	-4.056E 02	-1.793E 03	-8.618E 02	-9.313E 02	2.006E 03	2.414E 02	3.771E-02	2.521E 02	3.939E-02
4.811E 01	3.990E 01	3.596E 01	-3.177E 02	-2.009E 03	-9.262E 02	-1.083E 03	2.105E 03	2.558E 02	3.996E-02	2.305E 02	3.601E-02
4.873E 01	3.335E 01	3.335E 01	-2.203E 02	-2.176E 03	-9.744E 02	-1.201E 03	2.182E 03	2.138E 02	3.340E-02	2.138E 02	3.340E-02
5.018E 01	1.977E 01	1.977E 01	-2.174E 01	-2.495E 03	-1.082E 03	-1.413E 03	2.363E 03	1.267E 02	1.980E-02	1.267E 02	1.980E-02
5.071E 01	1.480E 01	1.480E 01	2.600E 01	-2.577E 03	-1.120E 03	-1.457E 03	2.430E 03	9.488E 01	1.482E-02	9.488E 01	1.482E-02
5.212E 01	1.135E 01	1.135E 01	1.227E 02	-2.761E 03	-1.214E 03	-1.547E 03	2.607E 03	7.276E 01	1.137E-02	7.276E 01	1.137E-02
5.422E 01	9.475E 00	9.475E 00	2.373E 02	-2.996E 03	-1.342E 03	-1.654E 03	2.873E 03	6.074E 01	9.489E-03	6.074E 01	9.489E-03
5.472E 01	9.067E 00	9.067E 00	2.614E 02	-3.046E 03	-1.371E 03	-1.675E 03	2.937E 03	5.813E 01	9.080E-03	5.813E 01	9.080E-03
5.547E 01	7.308E 00	7.308E 00	2.931E 02	-3.117E 03	-1.411E 03	-1.706E 03	3.033E 03	4.685E 01	7.319E-03	4.685E 01	7.319E-03
5.576E 01	6.625E 00	6.625E 00	3.035E 02	-3.144E 03	-1.426E 03	-1.718E 03	3.070E 03	4.247E 01	6.635E-03	4.247E 01	6.635E-03
5.623E 01	3.194E 00	5.525E 00	3.687E 02	-3.165E 03	-1.449E 03	-1.735E 03	3.102E 03	2.047E 01	3.199E-03	3.542E 01	5.533E-03
5.765E 01	5.525E 00	5.525E 00	4.080E 02	-3.294E 03	-1.509E 03	-1.784E 03	3.210E 03	3.542E 01	5.533E-03	3.542E 01	5.533E-03
5.785E 01	5.525E 00	5.525E 00	4.132E 02	-3.307E 03	-1.517E 03	-1.790E 03	3.234E 03	3.542E 01	5.533E-03	3.542E 01	5.533E-03
5.793E 01	5.525E 00	5.525E 00	4.154E 02	-3.313E 03	-1.520E 03	-1.793E 03	3.245E 03	3.542E 01	5.533E-03	3.542E 01	5.533E-03
5.821E 01	5.525E 00	5.525E 00	4.226E 02	-3.331E 03	-1.531E 03	-1.800E 03	3.280E 03	3.542E 01	5.533E-03	3.542E 01	5.533E-03
5.843E 01	4.669E 00	4.669E 00	4.276E 02	-3.345E 03	-1.539E 03	-1.806E 03	3.309E 03	2.993E 01	4.676E-03	2.993E 01	4.676E-03
5.916E 01	1.925E 00	1.925E 00	4.365E 02	-3.386E 03	-1.564E 03	-1.821E 03	3.402E 03	1.234E 01	1.928E-03	1.234E 01	1.928E-03
6.018E 01	7.975E 00	7.975E 00	4.480E 02	-3.441E 03	-1.597E 03	-1.845E 03	3.532E 03	5.113E 01	7.987E-03	5.113E 01	7.987E-03
6.219E 01	6.762E 00	6.762E 00	4.497E 02	-3.553E 03	-1.652E 03	-1.901E 03	3.790E 03	4.335E 01	6.773E-03	4.335E 01	6.773E-03
6.361E 01	6.531E 00	6.531E 00	4.497E 02	-3.636E 03	-1.690E 03	-1.946E 03	3.972E 03	4.187E 01	6.541E-03	4.187E 01	6.541E-03
6.607E 01	9.100E 00	9.100E 00	4.497E 02	-3.799E 03	-1.767E 03	-2.032E 03	4.289E 03	5.834E 01	9.114E-03	5.834E 01	9.114E-03

XABS	P-IP	P-OE	FOA	COX	G-IP	G-OE	CA-ALL	P-IE/PSO	P-IP/PTC	P-OE/PSO	P-CR/PTO
6.645E 01	9.492E 00	9.492E 00	4.497E 02	-3.826E 03	-1.760E 03	-2.045E 03	4.357E 03	6.085E 01	9.517E-03	6.085E 01	9.507E-03
6.669E 01	5.361E 00	9.742E 00	4.497E 02	-3.842E 03	-1.789E 03	-2.054E 03	4.506E 03	5.437E 01	5.369E-03	6.246E 01	9.757E-03
6.835E 01	5.705E 00	5.455E 00	5.254E 02	-3.946E 03	-1.839E 03	-2.107E 03	4.584E 03	3.657E 01	5.714E-03	3.497E 01	5.463E-03
6.902E 01	4.293E 00	3.180E 00	6.197E 02	-3.964E 03	-1.855E 03	-2.129E 03	4.665E 03	2.752E 01	4.299E-03	2.039E 01	3.185E-03
6.979E 01	2.670E 00	2.795E 00	7.109E 02	-4.026E 03	-1.872E 03	-2.157E 03	4.766E 03	1.712E 01	2.674E-03	1.792E 01	2.799E-03
7.051E 01	1.947E 00	2.435E 00	7.749E 02	-4.071E 03	-1.885E 03	-2.186E 03	4.846E 03	1.248E 01	1.950E-03	1.561E 01	2.439E-03
7.112E 01	1.335E 00	2.177E 00	8.172E 02	-4.105E 03	-1.895E 03	-2.210E 03	4.922E 03	8.559E 00	1.337E-03	1.396E 01	2.180E-03
7.250E 01	1.225E 00	1.593E 00	8.887E 02	-4.162E 03	-1.915E 03	-2.247E 03	5.088E 03	7.693E 00	1.227E-03	1.021E 01	1.595E-03
7.403E 01	1.079E 00	9.450E-01	9.465E 02	-4.208E 03	-1.934E 03	-2.273E 03	5.273E 03	6.914E 00	1.080E-03	6.058E 00	9.464E-04
7.493E 01	9.920E-01	5.623E-01	9.812E 02	-4.235E 03	-1.945E 03	-2.290E 03	5.370E 03	6.359E 00	9.934E-04	3.605E 00	5.632E-04
7.626E 01	8.650E-01	0.000	1.001E 03	-4.280E 03	-1.960E 03	-2.320E 03	5.422E 03	5.545E 00	8.663E-04	0.000	0.000
7.911E 01	1.395E 00	0.000	1.046E 03	-4.310E 03	-1.990E 03	-2.320E 03	5.520E 03	8.943E 00	1.397E-03	0.000	0.000
8.301E 01	1.305E 00	0.000	1.104E 03	-4.347E 03	-2.027E 03	-2.320E 03	5.625E 03	8.366E 00	1.307E-03	0.000	0.000
8.582E 01	1.205E 00	0.000	1.132E 03	-4.303E 03	-2.063E 03	-2.320E 03	5.679E 03	7.725E 00	1.207E-03	0.000	0.000
8.868E 01	1.260E 00	0.000	1.161E 03	-4.445E 03	-2.124E 03	-2.320E 03	5.702E 03	8.078E 00	1.262E-03	0.000	0.000
8.868E 01	1.260E 00	0.000	1.161E 03	-4.445E 03	-2.125E 03	-2.320E 03	5.702E 03	8.078E 00	1.262E-03	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.398E 01	8.398E 01	2.099E-03	3.355E-02
4.041E 01	1.449E-01	8.412E 01	2.099E-03	3.358E-02
4.072E 01	4.479E 00	8.860E 01	2.114E-03	3.396E-02
4.121E 01	7.157E 00	9.576E 01	2.159E-03	3.456E-02
4.150E 01	4.265E 00	1.000E 02	2.202E-03	3.505E-02
4.246E 01	1.377E 01	1.138E 02	2.275E-03	3.449E-02
4.269E 01	3.941E 00	1.177E 02	3.191E-03	2.725E-02
4.270E 01	1.748E-01	1.179E 02	2.576E-03	3.170E-02
4.277E 01	1.005E 00	1.189E 02	2.462E-03	3.416E-02
4.431E 01	2.010E 01	1.390E 02	2.836E-03	6.836E-02
4.480E 01	5.149E 00	1.442E 02	3.367E-03	5.659E-02
4.549E 01	6.766E 00	1.509E 02	3.388E-03	5.759E-02
4.619E 01	6.946E 00	1.579E 02	3.541E-03	5.558E-02
4.620E 01	9.960E-02	1.580E 02	3.228E-03	6.247E-02
4.625E 01	4.479E-01	1.584E 02	3.489E-03	5.814E-02
4.626E 01	9.644E-02	1.585E 02	3.147E-03	6.593E-02
4.731E 01	9.615E 00	1.681E 02	3.017E-03	6.446E-02
4.811E 01	7.195E 00	1.753E 02	3.099E-03	6.042E-02
4.873E 01	5.458E 00	1.808E 02	3.116E-03	5.596E-02
5.018E 01	1.313E 01	1.939E 02	3.004E-03	4.376E-02
5.071E 01	5.049E 00	1.990E 02	3.091E-03	3.556E-02
5.212E 01	1.285E 01	2.118E 02	2.901E-03	3.047E-02
5.422E 01	1.634E 01	2.282E 02	2.855E-03	2.607E-02
5.472E 01	3.572E 00	2.317E 02	2.957E-03	2.432E-02
5.547E 01	5.318E 00	2.370E 02	2.936E-03	2.089E-02
5.576E 01	2.004E 00	2.391E 02	2.831E-03	1.998E-02
5.623E 01	1.486E 00	2.405E 02	2.671E-03	1.446E-02
5.765E 01	4.168E 00	2.447E 02	2.610E-03	1.704E-02
5.785E 01	9.395E-01	2.456E 02	2.909E-03	1.571E-02
5.793E 01	4.468E-01	2.461E 02	3.444E-03	1.366E-02
5.821E 01	1.564E 00	2.477E 02	2.897E-03	1.571E-02
5.843E 01	1.169E 00	2.488E 02	2.884E-03	1.402E-02
5.916E 01	3.865E 00	2.527E 02	2.752E-03	7.605E-03
6.018E 01	4.638E 00	2.573E 02	2.379E-03	2.301E-02
6.219E 01	9.248E 00	2.666E 02	3.201E-03	1.625E-02
6.361E 01	7.774E 00	2.743E 02	3.033E-03	1.667E-02
6.607E 01	1.240E 01	2.868E 02	3.079E-03	1.999E-02
6.645E 01	1.722E 00	2.885E 02	3.385E-03	1.834E-02
6.669E 01	1.092E 00	2.896E 02	3.451E-03	1.628E-02
6.835E 01	7.473E 00	2.970E 02	3.388E-03	1.368E-02
6.902E 01	2.550E 00	2.996E 02	3.320E-03	1.061E-02
6.979E 01	2.565E 00	3.022E 02	3.270E-03	8.578E-03
7.051E 01	2.095E 00	3.042E 02	3.233E-03	7.339E-03
7.112E 01	1.574E 00	3.058E 02	3.202E-03	6.260E-03
7.250E 01	3.134E 00	3.090E 02	3.168E-03	5.321E-03
7.403E 01	2.964E 00	3.119E 02	3.113E-03	4.146E-03
7.493E 01	1.301E 00	3.132E 02	3.071E-03	3.388E-03
7.626E 01	6.600E-01	3.139E 02	3.077E-03	3.666E-03
7.911E 01	1.495E 00	3.154E 02	3.126E-03	5.212E-03
8.301E 01	1.781E 00	3.172E 02	3.094E-03	4.925E-03
8.582E 01	8.820E-01	3.180E 02	3.069E-03	4.619E-03
8.868E 01	3.612E-01	3.184E 02	3.061E-03	4.752E-03
8.868E 01	0.000	3.184E 02	3.061E-03	4.752E-03

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	828.	(LBF)
MEASURED THRUST	1484.	(LBF)
CALCULATED SPECIFIC IMPULSE	1848.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	3312.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.5594	
MEASURED THRUST COEFFICIENT	1.0029	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3915.	(LBF)
NET THRUST	939.	(LBF)
SPECIFIC IMPULSE	2095.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.6345	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.0	(LBF)
INLET MOMENTUM CHANGE	-391.9	(LBF)
COMBUSTOR FRICTION DRAG	204.5	(LBF)
COMBUSTOR STRUT DRAG	-4.60	(LBF)
COMBUSTOR MOMENTUM CHANGE	538.	(LBF)
NOZZLE FRICTION DRAG	29.93	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	682.	(LBF)
NOZZLE PRESSURE INTEGRAL	712.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-740.	(LBF)
TOTAL STRUT DRAG	-4.60	(LBF)
CAVITY FORCE	-2164.	(LBF)
CALCULATED LOAD CELL FORCE	-2076.	(LBF)
MEASURED LOAD CELL FORCE	-1420.	(LBF)
FUEL VACUUM SPECIFIC IMPULSE	0.0, 0.0, -153.4,	

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7090	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.593	(IN)
NOZZLE SHROUD TRAILING EDGE	74.933	(IN)
NOZZLE PLUG TRAILING EDGE	88.685	(IN)
STRUT LEADING EDGE	57.849	(IN)
STRUT TRAILING EDGE	66.449	(IN)
COMBUSTOR EXIT	66.449	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9920	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1036	
DELTA PT2	0.0900	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3716	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1050	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9144	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9160	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9294	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8774	
ENTHALPY AT PO - SUPERSONIC	-46.67	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-11.01	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0278
EQUIVALENCE RATIO	0.912
COMBUSTOR EFFICIENCY	0.791
TOTAL PRESSURE RATIO	0.0695
COMBUSTOR EFFECTIVENESS	0.7266
INJECTOR DISCHARGE COEFFICIENTS	0.6786, 0.7379, 0.8121,

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9591
NOZZLE COEFFICIENT - CT	0.8804
PROCESS EFFICIENCY	0.9200
KINETIC ENERGY EFFICIENCY	0.9101

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	
1B	42.694	B
1C	44.300	
2A	50.169	
2C	46.250	E
3A	55.459	
3B	57.644	
4	46.194	C

Reading 92

t = 290.37 sec.

RAMJET PERFORMANCE

12/23/74

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S U M M A R Y R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	A	A/AC	FUPIM	F	IVAC	PCI	ETAC
WIND TUNNEL		1	0 5														
0.000	998.749	2996	671.5(798)	1.2951	28.712	2592											
0.000	0.157	287	-60.7(69)	1.3955	28.711	833	7.269	6053	1.806	0.06136	15.591	0.9920	2973	5.772	190.7		
SPIKE TIP NS		2	0 6														
0.600	11.187	2996	671.5(798)	1.2949	28.711	2592											
0.600	10.255	2937	653.6(781)	1.2968	28.711	2568	0.368	946	2.119	0.06136	15.591	0.9920	3064	0.902	190.5		
WIND TUNNEL		3	0 0														
0.000	998.749	2996	671.5(798)	1.2951	28.712	2592											
0.000	0.165	291	-59.7(70)	1.3957	28.711	839	7.211	6049	1.808	0.06363	16.167	0.9920	3061	5.981	190.6		
SPIKE TIP NS		4	0 0														
0.600	11.187	2996	671.5(798)	1.2949	28.711	2592											
0.600	10.176	2932	652.0(779)	1.2969	28.711	2566	0.385	987	2.119	0.06363	16.167	0.9920	3061	0.976	190.6		
INLET THROAT		5	0 4														
40.400	400.100	2843	625.3(753)	1.2998	28.711	2530											
40.400	9.266	1103	140.1(270)	1.3742	28.711	1620	3.041	4927	1.856	0.76686	15.591	0.0792	2576	56.875	165.2		
INLET UPNRSK		6	0 3														
40.400	400.100	2843	625.3(753)	1.2998	28.711	2530											
40.400	8.003	1060	129.1(259)	1.3769	28.711	1590	3.134	4983	1.856	0.69897	15.591	0.0871	2593	54.124	166.3		
INLET DNNRSK		7	0 4														
40.400	104.605	2843	625.3(753)	1.2998	28.711	2530											
40.400	91.663	2758	599.7(728)	1.3024	28.711	2494	0.454	1132	1.948	0.69897	15.591	0.0871	2593	12.294	166.3		
COMBUSTOR		0 8	1 9														
40.410	264.580	2828	636.1(802)	1.3019	26.731	2617											
40.410	12.372	1319	181.8(350)	1.3622	26.731	1828	2.608	4768	1.999	0.77332	15.684	0.0792	2575	57.302	164.2	0.24	0.09
COMBUSTOR		0 9	2 4														
40.719	202.047	2985	632.3(849)	1.2948	26.912	2672											
40.719	15.507	1602	208.5(428)	1.3447	26.912	1995	2.308	4605	2.032	0.77613	15.684	0.0789	2558	55.545	163.1	0.24	0.27
COMBUSTOR		0 10	3 4														
41.209	218.715	2802	626.0(794)	1.3026	26.737	2605											
41.209	13.702	1411	205.6(375)	1.3568	26.737	1887	2.431	4586	2.010	0.77058	15.684	0.0795	2515	54.924	160.3	0.24	0.10
COMBUSTOR		0 11	4 3														
41.500	182.620	2837	622.1(804)	1.3009	26.787	2617											
41.500	15.340	1546	229.2(413)	1.3489	26.787	1967	2.254	4434	2.026	0.76265	15.684	0.0803	2477	52.551	157.9		
																0.24	0.15
COMBUSTOR		0 12	5 3														
42.460	118.874	2847	608.0(806)	1.2999	26.644	2618											
42.460	19.274	1836	296.7(497)	1.3347	26.644	2130	1.853	3947	2.058	0.71967	15.684	0.0851	2344	44.142	149.5	0.24	0.20
COMBUSTOR		0 13	6 11														
42.694	109.693	2630	617.0(787)	1.3108	25.035	2616											
42.694	20.064	1730	326.5(497)	1.3431	25.035	2148	1.775	3812	2.148	0.71618	15.770	0.0860	2310	42.428	146.5	0.47	0.04
COMBUSTOR		0 14	7 2														
42.704	109.173	2630	616.8(787)	1.3108	25.035	2616											
42.704	20.098	1733	327.2(498)	1.3430	25.035	2150	1.771	3806	2.148	0.71511	15.770	0.0861	2309	42.300	146.4	0.47	0.04
COMBUSTOR		0 15	8 2														
42.769	107.305	2623	615.8(784)	1.3111	25.032	2613											
42.769	20.318	1741	330.8(501)	1.3427	25.032	2154	1.753	3776	2.149	0.71393	15.770	0.0862	2299	41.892	145.6	0.47	0.04
COMBUSTOR		0 16	9 4														
44.310	71.662	2779	594.5(833)	1.3033	25.248	2671											
44.310	37.402	2383	462.7(703)	1.3163	25.248	2485	1.034	2569	2.194	0.65870	15.770	0.0935	2155	26.297	136.6	0.47	0.16
COMBUSTOR		0 17	10 4														
44.800	70.149	2672	588.8(799)	1.3078	25.159	2628											
44.800	42.835	2376	490.6(701)	1.3176	25.159	2487	0.891	2218	2.185	0.65097	15.770	0.0946	2125	22.437	134.7	0.47	0.11
COMBUSTOR		0 18	11 3														
45.489	69.787	2565	581.4(764)	1.3124	25.075	2563											
45.489	45.762	2317	499.8(684)	1.3206	25.075	2463	0.820	2021	2.174	0.64762	15.770	0.0951	2105	20.337	133.5	0.47	0.06

READING = 6092 BLOCK = 191 TIME = 290.367 MACH 7.3 PT = 998.749 TT = 2995.4

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	*	A/AC	PUPTH	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 8														
46.194	68.069	2456	586.5(785)	1.3187	23.237	2632											
46.194	41.579	2177	489.0(686)	1.3282	23.237	2487	0.868	2210	2.293	0.63467	15.880	0.0977	2131	21.796	134.2	0.75	0.04
COMBUSTOR	0	20	13 2														
46.204	68.026	2459	586.4(785)	1.3185	23.240	2634											
46.204	41.520	2180	488.6(687)	1.3281	23.240	2489	0.889	2215	2.293	0.63391	15.880	0.0978	2132	21.802	134.3	0.75	0.04
COMBUSTOR	0	21	14 21														
46.250	64.682	2362	602.8(814)	1.3247	21.333	2760											
46.250	41.246	2113	509.1(721)	1.3335	21.333	2563	0.845	2166	2.439	0.63761	16.016	0.0981	2114	21.459	132.0	1.11	0.03
COMBUSTOR	0	22	15 21														
46.260	65.791	2273	602.7(782)	1.3288	21.262	2658											
46.260	41.187	2022	508.8(689)	1.3378	21.262	2515	0.862	2168	2.425	0.63720	16.016	0.0981	2115	21.471	132.0	1.11	0.00
COMBUSTOR	0	23	16 4														
47.310	64.268	2384	591.3(822)	1.3234	21.376	2709											
47.310	34.956	2050	466.0(697)	1.3352	21.376	2523	0.992	2504	2.442	0.59055	16.016	0.1059	2195	22.982	137.0	1.11	0.04
COMBUSTOR	0	24	17 4														
48.110	61.303	2571	582.5(889)	1.3146	21.547	2792											
48.110	34.498	2236	455.2(763)	1.3261	21.547	2616	0.965	2523	2.469	0.54285	16.016	0.1152	2274	21.287	142.0	1.11	0.10
COMBUSTOR	0	25	18 4														
48.729	58.048	2783	575.6(967)	1.3048	21.741	2882											
48.729	30.400	2387	423.0(816)	1.3180	21.741	2682	1.030	2763	2.495	0.49513	16.016	0.1263	2359	21.260	147.3	1.11	0.16
COMBUSTOR	0	26	19 4														
50.179	54.049	3020	562.2(1054)	1.2937	21.977	2973											
50.179	18.402	2347	301.8(796)	1.3161	21.978	2644	1.365	3609	2.522	0.40238	16.016	0.1554	2529	22.570	157.9	1.11	0.24
COMBUSTOR	0	27	20 4														
50.709	56.394	2913	558.6(1014)	1.2984	21.892	2931											
50.709	14.017	2091	244.7(703)	1.3266	21.892	2510	1.579	3963	2.509	0.37632	16.016	0.1662	2569	23.177	160.4	1.11	0.21
COMBUSTOR	0	28	21 4														
52.119	53.432	2978	550.1(1038)	1.2952	21.967	2954											
52.119	10.875	2040	192.2(683)	1.3276	21.968	2476	1.709	4232	2.518	0.32073	16.016	0.1950	2650	21.094	165.4	1.11	0.23
COMBUSTOR	0	29	22 4														
54.219	48.090	3080	537.5(1079)	1.2901	21.999	2997											
54.219	8.500	2047	140.5(686)	1.3258	22.000	2477	1.800	4457	2.543	0.26345	16.051	0.2379	2741	18.248	170.8	1.12	0.27
COMBUSTOR	0	30	23 4														
54.719	45.265	3167	535.0(1112)	1.2859	22.084	3028											
54.719	8.542	2148	140.1(721)	1.3208	22.085	2527	1.759	4445	2.555	0.25269	16.051	0.2480	2760	17.456	172.0	1.12	0.30
COMBUSTOR	0	31	24 4														
55.469	48.771	3046	531.3(1066)	1.2915	21.983	2983											
55.469	6.882	1913	98.6(637)	1.3314	21.984	2400	1.939	4653	2.539	0.23820	16.051	0.2631	2785	17.226	173.5	1.12	0.26
COMBUSTOR	0	32	25 4														
55.760	51.197	2983	529.9(1043)	1.2943	21.930	2959											
55.760	6.238	1800	81.4(597)	1.3369	21.931	2336	2.029	4738	2.529	0.23305	16.051	0.2689	2793	17.159	174.0	1.12	0.25
COMBUSTOR	0	33	26 4														
56.229	49.089	2953	527.9(1031)	1.2957	21.908	2946											
56.229	4.250	1631	31.0(537)	1.3448	21.908	2231	2.235	4987	2.529	0.18427	16.051	0.3401	2858	14.280	178.1	1.12	0.24
COMBUSTOR	0	34	27 5														
57.654	34.737	3363	522.7(1185)	1.2758	22.291	3093											
57.654	5.452	2202	68.5(738)	1.3160	22.296	2542	1.875	4767	2.592	0.17032	16.051	0.3679	2892	12.618	180.2	1.12	0.36
COMBUSTOR	0	35	28 3														
57.849	34.071	3390	522.0(1195)	1.2743	22.319	3102											
57.849	5.486	2237	69.5(750)	1.3144	22.324	2559	1.860	4759	2.595	0.16862	16.051	0.3717	2896	12.470	180.4	1.12	0.37
COMBUSTOR	0	36	29 7														
57.929	34.717	3384	521.7(1193)	1.2747	22.314	3100											
57.929	5.500	2223	66.8(745)	1.3149	22.318	2552	1.870	4771	2.593	0.17051	16.051	0.3675	2898	12.643	180.6	1.12	0.37
COMBUSTOR	0	37	30 3														
58.209	34.443	3411	520.8(1203)	1.2733	22.341	3109											
58.209	5.550	2252	65.9(756)	1.3135	22.346	2566	1.860	4771	2.596	0.16997	16.051	0.3687	2904	12.602	180.9	1.12	0.37

ORIGINAL PAGE IS
OF POOR QUALITY

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	[illegible]	W/A	[illegible]	A/AC	FOP(F)	[illegible]	IVAC	PRT	ETAC
COMBUSTOR	0	38	31 4														
56.435	39.505	3228	520.1(1134)	1.2825	22.173	3047											
56.435	4.694	1961	32.5(652)	1.3270	22.175	2416	2.045	4939	2.570	0.16962	16.051	0.3695	2906	13.021	181.6	1.12	0.32
COMBUSTOR	0	39	32 11														
59.159	111.726	2557	518.0(885)	1.3133	21.590	2781											
59.159	1.950	892	-79.2(289)	1.3855	21.590	1687	3.241	5466	2.415	0.16699	16.051	0.3753	2915	14.186	181.6	1.12	0.14
COMBUSTOR	0	40	33 7														
60.179	27.350	3920	514.9(1396)	1.2422	22.850	3255											
60.179	7.800	3024	137.5(1039)	1.2795	22.879	2900	1.499	4346	2.644	0.16593	16.051	0.3777	2923	11.206	182.1	1.12	0.53
COMBUSTOR	0	41	34 6														
62.189	35.395	3428	508.2(1208)	1.2721	22.385	3112											
62.189	5.550	2252	46.3(755)	1.3129	22.391	2562	1.876	4806	2.592	0.17170	16.051	0.3650	2917	12.829	181.0	1.12	0.39
COMBUSTOR	0	42	35 4														
63.609	35.404	3454	503.4(1218)	1.2706	22.422	3120											
63.609	5.875	2304	49.7(773)	1.3106	22.428	2587	1.842	4765	2.594	0.17630	16.051	0.3553	2912	13.058	181.4	1.12	0.40
COMBUSTOR	0	43	36 5														
66.073	25.793	4070	493.5(1452)	1.2300	23.054	3286											
66.073	9.131	3316	163.8(1149)	1.2654	23.098	3005	1.352	4062	2.652	0.16717	16.051	0.3749	2903	10.552	180.9	1.12	0.59
COMBUSTOR	0	44	37 4														
66.449	23.208	4204	491.8(1504)	1.2175	23.196	3312											
66.449	9.628	3565	199.6(1245)	1.2515	23.260	3088	1.238	3824	2.666	0.15541	16.051	0.4032	2902	9.234	180.8	1.12	0.64
COMBUSTOR REGEN	45	38	4														
66.449	23.208	4421	609.8(1594)	1.2013	23.137	3378											
66.449	11.094	3893	340.7(1377)	1.2319	23.232	3204	1.132	3628	2.694	0.15541	16.051	0.4032	2956	8.762	184.1	1.12	0.64
NOZZLE AE	46	39	5														
88.685	23.208	4204	491.8(1476)	1.2175	23.196	3312											
88.685	0.610	1932	-434.0(624)	1.3149	23.276	2329	2.922	6807	2.666	0.03235	16.051	1.9371	3698	3.422	230.4	1.12	0.64
NOZZLE PO	47	40	5														
88.685	23.208	4204	491.8(1476)	1.2175	23.196	3312											
88.685	0.157	1380	-624.8(433)	1.3435	23.276	1990	3.756	7475	2.666	0.01277	16.051	4.9059	3926	1.484	244.6	1.12	0.64
NOZZLE AE REGEN	48	41	5														
88.685	23.208	4421	609.8(1594)	1.2013	23.137	3378											
88.685	0.650	2116	-367.7(690)	1.3071	23.276	2431	2.877	6994	2.694	0.03235	16.051	1.9371	3812	3.516	237.5	1.12	0.64
NOZZLE PO REGEN	49	42	5														
88.685	23.208	4421	609.8(1594)	1.2013	23.137	3378											
88.685	0.157	1497	-585.5(472)	1.3367	23.276	2067	3.741	7734	2.694	0.01218	16.051	5.1432	4064	1.464	253.2	1.12	0.64
FICTIVE COMBUSTR	65	58	0														
66.449	400.100	5038	491.8(1830)	1.1950	24.057	3527											
66.449	0.157	873	-1140.7(262)	1.3644	24.223	1564	5.779	9036	2.441	0.02540	16.051	2.4675	4608	3.567	287.1	1.12	1.00
FICTIVE NOZZLE	66	59	0														
88.685	21.042	4123	452.1(1470)	1.2222	23.210	3285											
88.685	0.626	1938	-431.9(626)	1.3146	23.276	2333	2.851	6651	2.665	0.03235	16.051	1.9371	3629	3.344	226.1	1.12	0.64

XABS	P-1B	P-06	PDA	QOX	Q-1B	Q-08	CA-ALL	P-1B/P80	P-1F/P10	P-08/P80	P-08/P10
6.981E-01	6.050E-01	0.000	-2.702E-01	0.000	0.000	0.000	2.470E-02	3.664E 00	6.058E-04	0.000	0.000
1.836E 01	6.050E-01	0.000	-2.016E 01	0.000	0.000	0.000	1.534E 02	3.664E 00	6.058E-04	0.000	0.000
3.070E 01	1.060E 00	0.000	-8.706E 01	0.000	0.000	0.000	5.055E 02	6.771E 00	1.061E-03	0.000	0.000
3.508E 01	1.976E 00	0.000	-1.860E 02	0.000	0.000	0.000	6.804E 02	1.262E 01	1.979E-03	0.000	0.000
3.555E 01	2.265E 00	0.000	-2.054E 02	0.000	0.000	0.000	7.013E 02	1.447E 01	2.268E-03	0.000	0.000
3.606E 01	2.150E 00	0.000	-2.278E 02	-3.427E 02	-3.427E 02	0.000	7.246E 02	1.373E 01	2.153E-03	0.000	0.000
3.648E 01	2.345E 00	0.000	-2.470E 02	-3.510E 02	-3.510E 02	0.000	7.443E 02	1.496E 01	2.348E-03	0.000	0.000
3.659E 01	2.347E 00	3.190E 00	-2.852E 02	-3.532E 02	-3.532E 02	0.000	7.495E 02	1.499E 01	2.350E-03	2.037E 01	3.194E-03
3.659E 01	2.347E 00	3.208E 00	-2.853E 02	-3.533E 02	-3.533E 02	0.000	7.496E 02	1.499E 01	2.350E-03	2.049E 01	3.212E-03
3.701E 01	2.355E 00	4.447E 00	-2.873E 02	-3.620E 02	-3.620E 02	0.000	7.928E 02	1.504E 01	2.358E-03	2.841E 01	4.453E-03
3.726E 01	2.276E 00	5.187E 00	-2.864E 02	-3.674E 02	-3.674E 02	0.000	8.190E 02	1.454E 01	2.279E-03	3.313E 01	5.194E-03
3.803E 01	2.030E 00	8.818E 00	-2.672E 02	-3.850E 02	-3.850E 02	0.000	9.020E 02	1.297E 01	2.033E-03	5.633E 01	8.829E-03
3.872E 01	6.466E 00	1.206E 01	-2.622E 02	-4.655E 02	-4.124E 02	-5.316E 01	9.767E 02	4.130E 01	6.474E-03	7.705E 01	1.208E-02
3.875E 01	6.666E 00	1.195E 01	-2.624E 02	-4.688E 02	-4.141E 02	-5.469E 01	9.822E 02	4.258E 01	6.674E-03	7.634E 01	1.197E-02
3.901E 01	8.340E 00	1.102E 01	-2.664E 02	-4.982E 02	-4.307E 02	-6.746E 01	1.012E 03	5.327E 01	8.350E-03	7.041E 01	1.104E-02
3.950E 01	1.156E 01	9.273E 00	-2.834E 02	-5.640E 02	-4.725E 02	-9.144E 01	1.068E 03	7.387E 01	1.158E-02	5.923E 01	9.284E-03
3.974E 01	1.109E 01	8.419E 00	-2.924E 02	-6.013E 02	-4.982E 02	-1.031E 02	1.095E 03	7.086E 01	1.111E-02	5.377E 01	8.429E-03
4.000E 01	1.058E 01	8.054E 00	-2.991E 02	-6.464E 02	-5.306E 02	-1.158E 02	1.126E 03	6.757E 01	1.059E-02	5.145E 01	8.064E-03
4.021E 01	1.290E 01	7.762E 00	-3.058E 02	-6.849E 02	-5.590E 02	-1.259E 02	1.150E 03	8.241E 01	1.292E-02	4.958E 01	7.772E-03
4.040E 01	1.502E 01	9.516E 00	-3.133E 02	-7.209E 02	-5.857E 02	-1.352E 02	1.172E 03	9.597E 01	1.504E-02	6.078E 01	9.528E-03
4.041E 01	1.514E 01	9.607E 00	-3.136E 02	-7.228E 02	-5.871E 02	-1.357E 02	1.173E 03	9.666E 01	1.515E-02	6.137E 01	9.619E-03
4.072E 01	1.857E 01	1.244E 01	-3.255E 02	-7.827E 02	-6.320E 02	-1.506E 02	1.210E 03	1.186E 02	1.859E-02	7.948E 01	1.246E-02
4.121E 01	2.402E 01	3.387E 00	-3.613E 02	-8.816E 02	-7.076E 02	-1.739E 02	1.267E 03	1.534E 02	2.405E-02	2.164E 01	3.392E-03
4.150E 01	2.725E 01	3.431E 00	-3.944E 02	-9.428E 02	-7.553E 02	-1.875E 02	1.301E 03	1.741E 02	2.728E-02	2.191E 01	3.435E-03
4.246E 01	3.497E 01	3.573E 00	-5.129E 02	-1.163E 03	-9.109E 02	-2.523E 02	1.416E 03	2.234E 02	3.502E-02	2.282E 01	3.577E-03
4.269E 01	3.652E 01	3.608E 00	-5.431E 02	-1.220E 03	-9.460E 02	-2.741E 02	1.444E 03	2.333E 02	3.657E-02	2.304E 01	3.612E-03
4.270E 01	3.659E 01	3.609E 00	-5.444E 02	-1.222E 03	-9.474E 02	-2.751E 02	1.445E 03	2.337E 02	3.663E-02	2.305E 01	3.614E-03
4.277E 01	3.702E 01	3.619E 00	-5.528E 02	-1.238E 03	-9.566E 02	-2.815E 02	1.452E 03	2.364E 02	3.706E-02	2.311E 01	3.623E-03
4.431E 01	4.720E 01	2.760E 01	-6.792E 02	-1.573E 03	-1.108E 03	-4.648E 02	1.638E 03	3.015E 02	4.726E-02	1.763E 02	2.764E-02
4.480E 01	5.044E 01	3.523E 01	-7.044E 02	-1.662E 03	-1.130E 03	-5.319E 02	1.698E 03	3.222E 02	5.050E-02	2.250E 02	3.528E-02
4.549E 01	4.557E 01	4.596E 01	-7.184E 02	-1.760E 03	-1.153E 03	-6.266E 02	1.782E 03	2.911E 02	4.563E-02	2.935E 02	4.601E-02
4.619E 01	4.059E 01	4.257E 01	-6.860E 02	-1.901E 03	-1.177E 03	-7.242E 02	1.868E 03	2.592E 02	4.064E-02	2.719E 02	4.262E-02
4.620E 01	4.052E 01	4.252E 01	-6.845E 02	-1.903E 03	-1.177E 03	-7.256E 02	1.869E 03	2.588E 02	4.057E-02	2.716E 02	4.258E-02
4.625E 01	4.019E 01	4.230E 01	-6.812E 02	-1.911E 03	-1.179E 03	-7.320E 02	1.875E 03	2.567E 02	4.024E-02	2.702E 02	4.236E-02
4.626E 01	4.012E 01	4.225E 01	-6.807E 02	-1.913E 03	-1.179E 03	-7.334E 02	1.876E 03	2.563E 02	4.017E-02	2.699E 02	4.231E-02
4.731E 01	3.270E 01	3.721E 01	-5.916E 02	-2.096E 03	-1.216E 03	-8.807E 02	2.006E 03	2.089E 02	3.274E-02	2.377E 02	3.726E-02
4.811E 01	3.562E 01	3.337E 01	-5.056E 02	-2.238E 03	-1.244E 03	-9.939E 02	2.105E 03	2.276E 02	3.567E-02	2.132E 02	3.341E-02
4.873E 01	3.040E 01	3.040E 01	-4.157E 02	-2.347E 03	-1.266E 03	-1.082E 03	2.182E 03	1.942E 02	3.044E-02	1.942E 02	3.044E-02
5.018E 01	1.840E 01	1.840E 01	-2.333E 02	-2.563E 03	-1.318E 03	-1.245E 03	2.363E 03	1.175E 02	1.843E-02	1.175E 02	1.843E-02
5.071E 01	1.402E 01	1.402E 01	-1.885E 02	-2.621E 03	-1.338E 03	-1.283E 03	2.430E 03	8.953E 01	1.403E-02	8.953E 01	1.403E-02
5.212E 01	1.087E 01	1.087E 01	-9.649E 01	-2.756E 03	-1.390E 03	-1.366E 03	2.607E 03	6.946E 01	1.089E-02	6.946E 01	1.089E-02
5.422E 01	8.500E 00	8.500E 00	1.017E 01	-2.936E 03	-1.471E 03	-1.467E 03	2.873E 03	5.429E 01	8.511E-03	5.429E 01	8.511E-03
5.472E 01	8.542E 00	8.542E 00	3.232E 01	-2.978E 03	-1.491E 03	-1.487E 03	2.937E 03	5.456E 01	8.552E-03	5.456E 01	8.552E-03
5.547E 01	6.882E 00	6.882E 00	6.216E 01	-3.037E 03	-1.520E 03	-1.516E 03	3.033E 03	4.396E 01	6.890E-03	4.396E 01	6.890E-03
5.576E 01	6.238E 00	6.238E 00	7.194E 01	-3.059E 03	-1.532E 03	-1.527E 03	3.070E 03	3.984E 01	6.246E-03	3.984E 01	6.246E-03
5.623E 01	3.300E 00	5.200E 00	1.380E 02	-3.092E 03	-1.547E 03	-1.544E 03	3.102E 03	2.108E 01	3.304E-03	3.321E 01	5.207E-03
5.765E 01	5.452E 00	5.452E 00	1.759E 02	-3.175E 03	-1.583E 03	-1.592E 03	3.210E 03	3.482E 01	5.459E-03	3.482E 01	5.459E-03
5.785E 01	5.486E 00	5.486E 00	1.810E 02	-3.186E 03	-1.588E 03	-1.598E 03	3.234E 03	3.504E 01	5.493E-03	3.504E 01	5.493E-03
5.793E 01	5.500E 00	5.500E 00	1.832E 02	-3.191E 03	-1.590E 03	-1.600E 03	3.245E 03	3.513E 01	5.507E-03	3.513E 01	5.507E-03
5.821E 01	5.550E 00	5.550E 00	1.904E 02	-3.206E 03	-1.597E 03	-1.608E 03	3.280E 03	3.545E 01	5.557E-03	3.545E 01	5.557E-03
5.843E 01	4.694E 00	4.694E 00	1.954E 02	-3.217E 03	-1.603E 03	-1.614E 03	3.309E 03	2.998E 01	4.699E-03	2.998E 01	4.699E-03
5.916E 01	1.950E 00	1.950E 00	2.044E 02	-3.251E 03	-1.621E 03	-1.630E 03	3.402E 03	1.246E 01	1.952E-03	1.246E 01	1.952E-03
6.018E 01	7.800E 00	7.800E 00	2.157E 02	-3.301E 03	-1.647E 03	-1.653E 03	3.532E 03	4.982E 01	7.810E-03	4.982E 01	7.810E-03
6.219E 01	5.550E 00	5.550E 00	2.173E 02	-3.407E 03	-1.700E 03	-1.708E 03	3.790E 03	3.545E 01	5.557E-03	3.545E 01	5.557E-03
6.361E 01	5.875E 00	5.875E 00	2.173E 02	-3.485E 03	-1.740E 03	-1.745E 03	3.972E 03	3.753E 01	5.882E-03	3.753E 01	5.882E-03
6.607E 01	9.131E 00	9.131E 00	2.173E 02	-3.644E 03	-1.822E 03	-1.822E 03	4.269E 03	5.832E 01	9.142E-03	5.832E 01	9.142E-03

XABS	P-IH	P-OH	PDA	DUX	V-IH	V-OH	CAWALL	P-IH/PSO	P-IH/PTO	P-OH/PSO	P-OH/PTO
6.645E 01	9.628E 00	9.628E 00	2.173E 02	-3.672E 03	-1.856E 03	-1.855E 03	4.537E 03	6.150E 01	9.640E-03	6.150E 01	9.640E-03
6.669E 01	5.393E 00	9.945E 00	2.173E 02	-3.669E 03	-1.845E 03	-1.844E 03	4.568E 03	3.445E 01	5.400E-03	6.352E 01	9.957E-03
6.835E 01	5.725E 00	5.145E 00	2.927E 02	-3.795E 03	-1.900E 03	-1.895E 03	4.584E 03	3.657E 01	5.732E-03	3.286E 01	5.151E-03
6.902E 01	4.334E 00	4.500E 00	3.924E 02	-3.832E 03	-1.918E 03	-1.914E 03	4.665E 03	2.768E 01	4.339E-03	2.874E 01	4.506E-03
6.979E 01	2.735E 00	3.598E 00	4.970E 02	-3.877E 03	-1.938E 03	-1.939E 03	4.760E 03	1.747E 01	2.738E-03	2.298E 01	3.603E-03
7.051E 01	2.010E 00	2.755E 00	5.682E 02	-3.924E 03	-1.954E 03	-1.970E 03	4.848E 03	1.284E 01	2.012E-03	1.760E 01	2.758E-03
7.112E 01	1.395E 00	2.447E 00	6.141E 02	-3.962E 03	-1.965E 03	-1.996E 03	4.922E 03	8.910E 00	1.397E-03	1.563E 01	2.450E-03
7.250E 01	1.280E 00	1.752E 00	6.914E 02	-4.021E 03	-1.988E 03	-2.033E 03	5.008E 03	8.176E 00	1.282E-03	1.119E 01	1.754E-03
7.403E 01	1.127E 00	9.800E-01	7.526E 02	-4.066E 03	-2.009E 03	-2.057E 03	5.273E 03	7.201E 00	1.129E-03	6.260E 00	9.812E-04
7.493E 01	1.037E 00	5.242E-01	7.880E 02	-4.093E 03	-2.021E 03	-2.072E 03	5.370E 03	6.625E 00	1.039E-03	3.348E 00	5.248E-04
7.626E 01	9.050E-01	0.000	8.085E 02	-4.137E 03	-2.037E 03	-2.100E 03	5.422E 03	5.781E 00	9.061E-04	0.000	0.000
7.911E 01	1.395E 00	0.000	8.545E 02	-4.169E 03	-2.069E 03	-2.100E 03	5.520E 03	8.910E 00	1.397E-03	0.000	0.000
8.301E 01	1.335E 00	0.000	9.128E 02	-4.208E 03	-2.108E 03	-2.100E 03	5.625E 03	8.527E 00	1.337E-03	0.000	0.000
8.582E 01	1.255E 00	0.000	9.416E 02	-4.245E 03	-2.145E 03	-2.100E 03	5.679E 03	8.016E 00	1.257E-03	0.000	0.000
8.868E 01	1.325E 00	0.000	9.727E 02	-4.309E 03	-2.209E 03	-2.100E 03	5.702E 03	8.463E 00	1.327E-03	0.000	0.000
8.868E 01	1.325E 00	0.000	9.727E 02	-4.309E 03	-2.209E 03	-2.100E 03	5.702E 03	8.464E 00	1.327E-03	0.000	0.000

READING = 0092 BLOCK = 191 TIME = 290.367 MACH 7.5 P1 = 998.749 T1 = 2996.4

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.439E 01	8.439E 01	2.054E-03	3.208E-02
4.041E 01	1.615E-01	8.455E 01	2.684E-03	3.724E-02
4.072E 01	5.137E 00	8.969E 01	2.350E-03	4.725E-02
4.121E 01	7.811E 00	9.750E 01	2.560E-03	4.111E-02
4.150E 01	4.645E 00	1.021E 02	2.472E-03	4.526E-02
4.246E 01	1.433E 01	1.165E 02	2.724E-03	4.822E-02
4.269E 01	3.545E 00	1.200E 02	3.134E-03	4.550E-02
4.270E 01	1.468E-01	1.202E 02	2.760E-03	5.085E-02
4.277E 01	9.073E-01	1.211E 02	2.772E-03	5.092E-02
4.431E 01	1.856E 01	1.396E 02	3.090E-03	5.923E-02
4.480E 01	4.633E 00	1.443E 02	3.300E-03	5.508E-02
4.549E 01	5.938E 00	1.502E 02	3.303E-03	5.564E-02
4.619E 01	6.139E 00	1.563E 02	3.449E-03	5.335E-02
4.620E 01	8.950E-02	1.564E 02	3.196E-03	5.884E-02
4.625E 01	4.094E-01	1.568E 02	3.518E-03	5.340E-02
4.626E 01	8.951E-02	1.569E 02	3.223E-03	5.978E-02
4.731E 01	9.018E 00	1.659E 02	3.040E-03	6.018E-02
4.811E 01	6.703E 00	1.726E 02	3.070E-03	5.751E-02
4.873E 01	5.046E 00	1.777E 02	3.089E-03	5.308E-02
5.018E 01	1.202E 01	1.897E 02	2.968E-03	4.172E-02
5.071E 01	4.578E 00	1.943E 02	3.052E-03	3.419E-02
5.212E 01	1.165E 01	2.059E 02	2.877E-03	2.943E-02
5.422E 01	1.496E 01	2.209E 02	2.834E-03	2.409E-02
5.472E 01	3.257E 00	2.242E 02	2.892E-03	2.347E-02
5.547E 01	4.813E 00	2.290E 02	2.900E-03	1.998E-02
5.576E 01	1.825E 00	2.308E 02	2.800E-03	1.911E-02
5.623E 01	1.352E 00	2.321E 02	2.638E-03	1.424E-02
5.765E 01	3.810E 00	2.360E 02	2.624E-03	1.666E-02
5.785E 01	8.629E-01	2.368E 02	2.920E-03	1.536E-02
5.793E 01	4.068E-01	2.372E 02	3.412E-03	1.338E-02
5.821E 01	1.424E 00	2.386E 02	2.914E-03	1.545E-02
5.843E 01	1.075E 00	2.397E 02	2.906E-03	1.381E-02
5.916E 01	3.578E 00	2.433E 02	2.773E-03	7.619E-03
6.018E 01	4.305E 00	2.476E 02	2.415E-03	2.212E-02
6.219E 01	8.649E 00	2.563E 02	3.167E-03	1.415E-02
6.361E 01	7.136E 00	2.634E 02	2.885E-03	1.594E-02
6.607E 01	1.104E 01	2.744E 02	3.032E-03	1.975E-02
6.645E 01	1.531E 00	2.760E 02	3.384E-03	1.776E-02
6.669E 01	9.812E-01	2.769E 02	3.422E-03	1.595E-02
6.835E 01	6.815E 00	2.838E 02	3.344E-03	1.322E-02
6.902E 01	2.431E 00	2.862E 02	3.303E-03	1.166E-02
6.979E 01	2.566E 00	2.888E 02	3.240E-03	9.349E-03
7.051E 01	2.089E 00	2.908E 02	3.169E-03	7.737E-03
7.112E 01	1.560E 00	2.924E 02	3.158E-03	6.657E-03
7.250E 01	3.121E 00	2.955E 02	3.122E-03	5.612E-03
7.403E 01	2.929E 00	2.985E 02	3.059E-03	4.266E-03
7.493E 01	1.266E 00	2.997E 02	3.008E-03	3.417E-03
7.626E 01	6.436E-01	3.004E 02	3.022E-03	3.808E-03
7.911E 01	1.448E 00	3.018E 02	3.070E-03	5.214E-03
8.301E 01	1.712E 00	3.035E 02	3.041E-03	5.011E-03
8.582E 01	8.586E-01	3.044E 02	3.018E-03	4.766E-03
8.868E 01	3.545E-01	3.047E 02	3.012E-03	4.936E-03
8.868E 01	0.000	3.047E 02	3.012E-03	4.936E-03

ORIGINAL PAGE IS
OF POOR QUALITY

RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	655.	(LBF)
MEASURED THRUST	1322.	(LBF)
CALCULATED SPECIFIC IMPULSE	1514.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	3056.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.4432	
MEASURED THRUST COEFFICIENT	0.8944	

REGENERATIVE-COOLED ENGINE PERFORMANCE CALCULATED

STREAM THRUST	3740.	(LBF)
NET THRUST	766.	(LBF)
SPECIFIC IMPULSE	1771.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.5184	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.4	(LBF)
INLET MOMENTUM CHANGE	-397.7	(LBF)
COMBUSTOR FRICTION DRAG	191.6	(LBF)
COMBUSTOR STRUT DRAG	-8.49	(LBF)
COMBUSTOR MOMENTUM CHANGE	326.	(LBF)
NOZZLE FRICTION DRAG	28.77	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	727.	(LBF)
NOZZLE PRESSURE INTEGRAL	755.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-739.	(LBF)
TOTAL STRUT DRAG	-8.49	(LBF)
CAVITY FORCE	-2153.	(LBF)
CALCULATED LOAD CELL FORCE	-2237.	(LBF)
MEASURED LOAD CELL FORCE	-1570.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, 0.0, -156.3,

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9920	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1034	
DELTA PT2	0.0861	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.4006	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1047	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9251	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9175	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9163	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8625	
ENTHALPY AT PO - SUPERSONIC	-45.66	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-6.24	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0277
EQUIVALENCE RATIO	1.119
COMBUSTOR EFFICIENCY	0.642
TOTAL PRESSURE RATIO	0.0580
COMBUSTOR EFFECTIVENESS	0.6656

INJECTOR DISCHARGE COEFFICIENTS 0.9374, 0.5433, 0.6051, 0.8396

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9812
NOZZLE COEFFICIENT - C1	0.9045
PROCESS EFFICIENCY	1.0035
KINETIC ENERGY EFFICIENCY	0.9593

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7090	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.593	(IN)
NOZZLE SHROUD TRAILING EDGE	74.933	(IN)
NOZZLE PLUG TRAILING EDGE	88.665	(IN)
STRUT LEADING EDGE	57.849	(IN)
STRUT TRAILING EDGE	66.449	(IN)
COMBUSTOR EXIT	66.449	(IN)

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.694	B
1C	44.300	
2A	50.169	
2C	46.250	E
3A	55.459	
3B	57.644	
4	46.194	C

Reading 92

t = 312.87 sec.

READING = 0092 BLOCK = 216 TIME = 312.867 MACH 7.5 PT = 997.999 TT = 3006.2

RAMJET PERFORMANCE

S U M M A R Y R E P O R T

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	*	A/AC	FUMIN	W	IVAL	PHI	ETAL
WIND TUNNEL		1	0 5														
0.000	997.999	3006	674.2(801)	1.2947	28.730	2595											
0.000	0.156	288	-60.4(70)	1.3956	28.729	634	7.268	6063	1.809	0.06113	15.527	0.9917	2966	5.759	191.0		
SPIKE TIP NS		2	0 6														
0.600	11.150	3006	674.2(801)	1.2945	28.729	2595											
0.600	10.219	2947	656.3(783)	1.2965	28.729	2571	0.369	946	2.120	0.06113	15.527	0.9917	3053	0.901	190.6		
WIND TUNNEL		3	0 0														
0.000	997.999	3006	674.2(801)	1.2947	28.730	2595											
0.000	0.164	292	-59.4(71)	1.3956	28.729	840	7.211	6059	1.809	0.06331	16.081	0.9917	3070	5.961	190.9		
SPIKE TIP NS		4	0 0														
0.600	11.150	3006	674.2(801)	1.2945	28.729	2595											
0.600	10.142	2942	654.8(782)	1.2965	28.729	2569	0.384	988	2.120	0.06331	16.081	0.9917	3070	0.972	190.9		
INLET THROAT		5	0 3														
40.400	393.051	2868	632.6(760)	1.2988	28.730	2539											
40.400	9.384	1124	145.4(275)	1.3727	28.729	1634	3.021	4937	1.859	0.76612	15.527	0.0791	2573	56.785	165.7		
INLET UPNRSK		6	0 3														
40.400	393.051	2868	632.6(760)	1.2988	28.730	2539											
40.400	8.105	1080	134.2(264)	1.3755	28.729	1604	3.114	4994	1.859	0.69648	15.527	0.0870	2591	54.050	166.6		
INLET DNNRSK		7	0 4														
40.400	104.539	2868	632.6(760)	1.2989	28.729	2539											
40.400	91.569	2782	606.7(734)	1.3015	28.729	2503	0.455	1138	1.951	0.69648	15.527	0.0870	2591	12.319	166.6		
COMBUSTOR	0	8	1 21														
40.410	285.409	2839	641.7(796)	1.3013	27.070	2605											
40.410	10.717	1251	170.2(326)	1.3660	27.070	1772	2.742	4857	1.975	0.76973	15.602	0.0791	2573	58.103	164.9	0.19	0.07
COMBUSTOR	0	9	2 3														
40.721	260.830	2873	639.3(805)	1.2997	27.114	2616											
40.721	12.532	1355	186.2(355)	1.3594	27.114	1838	2.591	4762	1.984	0.77259	15.602	0.0786	2562	57.170	164.2	0.19	0.12
COMBUSTOR	0	10	3 21														
41.211	270.364	2774	635.3(776)	1.3039	27.021	2580											
41.211	9.455	1193	166.6(311)	1.3699	27.021	1734	2.787	4833	1.972	0.76693	15.602	0.0794	2536	57.602	162.5	0.19	0.02
COMBUSTOR	0	11	4 21														
41.500	253.129	2753	632.9(770)	1.3048	27.007	2572											
41.500	10.095	1226	181.3(320)	1.3661	27.007	1757	2.706	4754	1.975	0.75911	15.602	0.0802	2513	56.082	161.1	0.19	0.00
COMBUSTOR	0	12	5 21														
42.460	174.910	2726	624.8(761)	1.3057	27.005	2560											
42.460	5.583	1140	156.7(297)	1.3732	27.005	1698	2.844	4829	1.999	0.71639	15.602	0.0850	2463	53.765	157.9	0.19	0.00
COMBUSTOR	0	13	6 21														
42.696	144.873	2707	632.1(791)	1.3074	25.748	2614											
42.696	7.055	1265	186.4(347)	1.3666	25.748	1827	2.585	4723	2.089	0.71082	15.666	0.0860	2455	52.169	156.7	0.36	0.03
COMBUSTOR	0	14	7 21														
42.706	155.990	2664	632.0(778)	1.3094	25.705	2598											
42.706	7.117	1220	187.0(334)	1.3696	25.705	1798	2.625	4719	2.079	0.71070	15.666	0.0861	2455	52.120	156.7	0.36	0.01
COMBUSTOR	0	15	8 21														
42.771	159.163	2656	631.5(775)	1.3097	25.699	2594											
42.771	7.523	1227	191.1(336)	1.3692	25.699	1803	2.604	4694	2.077	0.70902	15.666	0.0863	2452	51.725	156.5	0.36	0.00
COMBUSTOR	0	16	9 6														
44.310	88.618	3372	621.6(998)	1.2765	26.486	2843											
44.310	27.396	2591	360.1(743)	1.3024	26.469	2516	1.437	3617	2.176	0.65563	15.666	0.0935	2416	36.052	154.2	0.36	0.53
COMBUSTOR	0	17	10 4														
44.800	81.569	3563	619.2(1058)	1.2669	26.708	2899											
44.800	33.723	2941	406.0(853)	1.2881	26.714	2655	1.230	3266	2.192	0.64747	15.666	0.0945	2406	32.865	153.6	0.36	0.67
COMBUSTOR	0	18	11 4														
45.491	79.454	3636	616.0(1081)	1.2629	26.605	2919											
45.491	37.060	3100	429.9(903)	1.2816	26.611	2714	1.124	3052	2.197	0.64324	15.666	0.0951	2403	30.507	153.4	0.36	0.73

	P	T	H	GAMMA	MOLWT	SONV	MACH	VEL	S	W/A	W	A/AC	NOPTM	Q	IVAC	PHI	ETAC
COMBUSTOR	0	19	12 5														
46.196	78.493	3465	621.9(1083)	1.2727	25.194	2950											
46.196	35.925	2918	425.5(893)	1.2911	25.196	2727	1.150	3135	2.289	0.62927	15.746	0.0977	2435	30.655	154.5	0.56	0.45
COMBUSTOR	0	20	13 2														
46.206	78.442	3469	621.8(1084)	1.2725	25.198	2951											
46.206	35.901	2921	425.2(894)	1.2910	25.202	2728	1.150	3136	2.289	0.62851	15.746	0.0978	2434	30.633	154.6	0.56	0.45
COMBUSTOR	0	21	14 6														
46.250	77.516	3135	634.2(1041)	1.2900	23.171	2945											
46.250	35.792	2623	443.8(854)	1.3066	23.172	2712	1.138	3086	2.399	0.63140	15.855	0.0980	2420	30.282	152.6	0.84	0.23
COMBUSTOR	0	22	15 2														
46.260	77.496	3134	634.1(1042)	1.2899	23.172	2945											
46.260	35.768	2624	443.5(854)	1.3066	23.174	2712	1.138	3088	2.399	0.63106	15.855	0.0981	2420	30.279	152.6	0.84	0.23
COMBUSTOR	0	23	16 4														
47.310	74.475	3334	621.1(1112)	1.2801	23.396	3012											
47.310	33.183	2781	411.6(907)	1.2984	23.399	2770	1.169	3238	2.416	0.58491	15.855	0.1056	2495	29.432	157.4	0.84	0.32
COMBUSTOR	0	24	17 4														
48.110	69.808	3610	609.3(1209)	1.2659	23.700	3096											
48.110	34.754	3106	413.2(1021)	1.2835	23.706	2892	1.083	3132	2.437	0.53758	15.855	0.1152	2569	26.168	162.0	0.84	0.42
COMBUSTOR	0	25	18 4														
48.731	66.136	3856	600.1(1297)	1.2520	23.978	3164											
48.731	31.375	3304	379.2(1089)	1.2728	23.993	2952	1.126	3325	2.454	0.49016	15.855	0.1263	2653	25.326	167.3	0.84	0.52
COMBUSTOR	0	26	19 4														
50.181	63.803	3990	583.5(1345)	1.2434	24.164	3195											
50.181	18.626	3095	226.2(1008)	1.2776	24.191	2851	1.483	4228	2.461	0.39634	15.855	0.1554	2825	26.176	178.2	0.84	0.59
COMBUSTOR	0	27	20 4														
50.711	68.761	3780	579.9(1269)	1.2558	23.952	3139											
50.711	13.967	2679	155.8(860)	1.2946	23.967	2682	1.718	4607	2.444	0.37254	15.855	0.1662	2865	26.670	180.7	0.84	0.51
COMBUSTOR	0	28	21 4														
52.121	62.824	3926	571.9(1321)	1.2468	24.127	3176											
52.121	11.625	2746	111.7(881)	1.2901	24.151	2700	1.777	4799	2.458	0.31751	15.855	0.1950	2945	23.679	185.8	0.84	0.57
COMBUSTOR	0	29	22 4														
54.221	62.684	3847	559.9(1297)	1.2511	23.970	3159											
54.221	8.025	2463	28.4(784)	1.3005	23.989	2577	2.001	5157	2.461	0.26081	15.890	0.2379	3036	20.901	191.0	0.85	0.55
COMBUSTOR	0	30	23 4														
54.721	55.288	4049	557.5(1371)	1.2380	24.192	3210											
54.721	6.656	2751	44.0(884)	1.2877	24.229	2696	1.880	5069	2.481	0.25015	15.890	0.2480	3054	19.707	192.2	0.85	0.63
COMBUSTOR	0	31	24 4														
55.471	60.901	3874	554.1(1307)	1.2492	24.014	3165											
55.471	6.941	2420	-4.2(768)	1.3014	24.035	2552	2.071	5286	2.464	0.23581	15.890	0.2631	3078	19.370	193.7	0.85	0.56
COMBUSTOR	0	32	25 4														
55.760	64.654	3786	552.8(1275)	1.2544	23.925	3142											
55.760	6.279	2265	-24.1(715)	1.3061	23.942	2481	2.166	5373	2.455	0.23074	15.890	0.2689	3086	19.266	194.2	0.85	0.53
COMBUSTOR	0	33	26 4														
56.231	63.415	3726	550.9(1253)	1.2576	23.868	3124											
56.231	4.266	2034	-82.1(635)	1.3177	23.881	2362	2.383	5628	2.453	0.18243	15.890	0.3401	3151	15.955	198.3	0.85	0.51
COMBUSTOR	0	34	27 5														
57.656	43.362	4218	545.6(1432)	1.2239	24.409	3243											
57.656	5.452	2769	-38.7(886)	1.2841	24.475	2688	2.012	5408	2.505	0.16861	15.890	0.3679	3185	14.170	200.4	0.85	0.71
COMBUSTOR	0	35	28 4														
57.851	42.469	4250	544.9(1443)	1.2213	24.446	3249											
57.851	5.486	2815	-37.6(902)	1.2820	24.518	2705	1.996	5399	2.508	0.16696	15.890	0.3716	3189	14.008	200.7	0.85	0.72
COMBUSTOR	0	36	29 21														
57.931	32.141	4785	544.7(1639)	1.1687	25.047	3332											
57.931	5.500	3626	-40.7(1188)	1.2343	25.404	2960	1.829	5412	2.540	0.16889	15.890	0.3673	3190	14.204	200.8	0.85	1.00
COMBUSTOR	0	37	30 21														
58.211	32.404	4784	543.7(1639)	1.1689	25.049	3332											
58.211	5.550	3625	-41.2(1187)	1.2344	25.404	2959	1.828	5410	2.540	0.16827	15.890	0.3687	3196	14.147	201.1	0.85	1.00

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                 P      T       H           GAMMA  MOLWT SONV  MACH  VEL   S      F/A      W      A/AC    PCHTP   I     IVAC  PTI  ETAC
COMBUSTOR        0  38   31  21
58.437     31.543 4760   543.0(1637) 1.1666 25.046 3330
58.437      4.700 3533   -78.8(1153) 1.2395 25.411 2927 1.966 5578 2.542 0.16792 15.890 0.3695    3200 14.557 201.4 0.65 1.00
COMBUSTOR        0  39   32  21
59.161     21.145 4742   540.8(1623) 1.1643 25.010 3313
59.161      1.975 3217  -203.6(1035) 1.2544 25.427 2809 2.173 6103 2.573 0.16532 15.890 0.3755    3204 15.661 201.6 0.65 1.00
COMBUSTOR        0  40   33 200
60.181     33.447 4778   537.7(1636) 1.1698 25.059 3330
60.181      7.700 3816    40.1(1260) 1.2230 25.383 3023 1.650 4990 2.536 0.16427 15.890 0.3777    3209 12.736 202.0 0.65 1.00
COMBUSTOR        0  41   34  21
62.191     33.024 4768   531.2(1632) 1.1702 25.065 3327
62.191      5.387 3569   -64.3(1166) 1.2360 25.410 2941 1.857 5459 2.535 0.16998 15.890 0.3650    3200 14.421 201.4 0.65 1.00
COMBUSTOR        0  42   35  21
63.611     33.522 4763   526.7(1630) 1.1708 25.072 3325
63.611      5.469 3561   -67.8(1163) 1.2387 25.411 2938 1.856 5454 2.533 0.17459 15.890 0.3553    3192 14.799 200.8 0.65 1.00
COMBUSTOR        0  43   36 200
66.075     32.599 4748   518.3(1624) 1.1712 25.079 3320
66.075      8.918 3899    76.6(1291) 1.2180 25.371 3050 1.541 4701 2.534 0.16549 15.890 0.3749    3178 12.091 200.0 0.65 1.00
COMBUSTOR        0  44   37 200
66.451     29.917 4739   516.9(1621) 1.1704 25.073 3316
66.451      9.444 3992   120.0(1327) 1.2109 25.351 3079 1.448 4457 2.540 0.15385 15.890 0.4032    3176 10.655 199.9 0.65 1.00
COMBUSTOR  REGEN    45   38   4
66.451     29.917 4887   625.7(1681) 1.1617 24.937 3364
66.451      7.783 4046   149.9(1348) 1.2033 25.328 3092 1.578 4880 2.563 0.15385 15.890 0.4032    3214 11.667 202.3 0.65 1.00
NOZZLE  AE          46   39   5
88.687     29.917 4739   516.9(1571) 1.1704 25.073 3316
88.687      0.611 2286  -543.3( 700) 1.2905 25.436 2402 3.033 7284 2.540 0.03203 15.890 1.9371    3900  3.625 245.5 0.65 1.00
NOZZLE  PO          47   40   5
88.687     29.917 4739   516.9(1571) 1.1704 25.073 3316
88.687      0.156 1664  -752.3( 492) 1.3181 25.436 2071 3.849 7969 2.540 0.01232 15.890 5.0365    4138  1.526 260.4 0.65 1.00
NOZZLE  AE REGEN    48   41   5
88.687     29.917 4887   625.7(1681) 1.1617 24.937 3364
88.687      0.646 2470  -479.1( 764) 1.2836 25.436 2469 2.967 7435 2.563 0.03203 15.890 1.9371    3993  3.701 251.3 0.65 1.00
NOZZLE  PO REGEN    49   42   5
88.687     29.917 4887   625.7(1681) 1.1617 24.937 3364
88.687      0.156 1763  -713.4( 531) 1.3120 25.436 2138 3.828 8186 2.563 0.01181 15.890 5.2550    4253  1.502 267.7 0.65 1.00
FICTIVE COMBUSTR    65   58   0
66.451    393.051 4909   516.9(1684) 1.1996 25.263 3404
66.451      0.156  854-1000.6( 243) 1.3670 25.436 1510 5.769 8714 2.337 0.02625 15.890 2.3636    4398  3.555 276.8 0.65 1.00
FICTIVE NOZZLE      66   59   0
88.687     31.775 4691   461.1(1601) 1.1745 25.118 3302
88.687      0.583 2183  -579.0( 665) 1.2944 25.436 2350 3.099 7283 2.528 0.03203 15.890 1.9371    3867  3.625 244.6 0.65 1.00
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XABS	P-IB	P-OB	PDA	QUX	Q-IB	Q-OB	CAWALL	P-IB/P80	P-IB/PIO	P-OB/P80	P-OB/PIO
6.981E-01	6.050E-01	0.000	-2.693E-01	0.000	0.000	0.000	2.470E-02	3.872E 00	6.062E-04	0.000	0.000
1.836E 01	6.050E-01	0.000	-2.016E 01	0.000	0.000	0.000	1.634E 02	3.872E 00	6.062E-04	0.000	0.000
3.070E 01	1.045E 00	0.000	-8.705E 01	0.000	0.000	0.000	5.055E 02	6.688E 00	1.047E-03	0.000	0.000
3.508E 01	1.966E 00	0.000	-1.646E 02	0.000	0.000	0.000	6.804E 02	1.258E 01	1.970E-03	0.000	0.000
3.555E 01	2.270E 00	0.000	-2.039E 02	0.000	0.000	0.000	7.013E 02	1.453E 01	2.275E-03	0.000	0.000
3.606E 01	2.150E 00	0.000	-2.264E 02	-3.427E 02	-3.427E 02	0.000	7.246E 02	1.376E 01	2.154E-03	0.000	0.000
3.648E 01	2.360E 00	0.000	-2.457E 02	-3.510E 02	-3.510E 02	0.000	7.443E 02	1.510E 01	2.365E-03	0.000	0.000
3.659E 01	2.357E 00	3.190E 00	-2.840E 02	-3.533E 02	-3.533E 02	0.000	7.494E 02	1.508E 01	2.362E-03	2.041E 01	3.196E-03
3.659E 01	2.357E 00	3.208E 00	-2.840E 02	-3.534E 02	-3.534E 02	0.000	7.497E 02	1.508E 01	2.361E-03	2.053E 01	3.214E-03
3.701E 01	2.345E 00	4.449E 00	-2.860E 02	-3.620E 02	-3.620E 02	0.000	7.927E 02	1.501E 01	2.350E-03	2.848E 01	4.458E-03
3.726E 01	2.269E 00	5.200E 00	-2.851E 02	-3.674E 02	-3.674E 02	0.000	8.191E 02	1.452E 01	2.273E-03	3.328E 01	5.210E-03
3.803E 01	2.035E 00	8.828E 00	-2.659E 02	-3.849E 02	-3.849E 02	0.000	9.018E 02	1.302E 01	2.039E-03	5.650E 01	8.846E-03
3.872E 01	6.544E 00	1.209E 01	-2.611E 02	-4.674E 02	-4.049E 02	-6.253E 01	9.788E 02	4.188E 01	6.557E-03	7.736E 01	1.211E-02
3.875E 01	6.733E 00	1.198E 01	-2.613E 02	-4.701E 02	-4.059E 02	-6.421E 01	9.821E 02	4.309E 01	6.747E-03	7.670E 01	1.201E-02
3.901E 01	8.430E 00	1.105E 01	-2.654E 02	-4.947E 02	-4.154E 02	-7.923E 01	1.011E 03	5.395E 01	8.447E-03	7.074E 01	1.108E-02
3.950E 01	1.161E 01	9.300E 00	-2.826E 02	-5.443E 02	-4.368E 02	-1.074E 02	1.068E 03	7.430E 01	1.163E-02	5.952E 01	9.318E-03
3.974E 01	1.104E 01	8.437E 00	-2.914E 02	-5.704E 02	-4.491E 02	-1.213E 02	1.095E 03	7.065E 01	1.106E-02	5.400E 01	8.454E-03
4.000E 01	1.042E 01	8.079E 00	-2.980E 02	-5.998E 02	-4.637E 02	-1.361E 02	1.125E 03	6.672E 01	1.045E-02	5.171E 01	8.095E-03
4.021E 01	1.132E 01	7.787E 00	-3.037E 02	-6.246E 02	-4.764E 02	-1.482E 02	1.150E 03	7.246E 01	1.134E-02	4.984E 01	7.803E-03
4.040E 01	1.212E 01	9.191E 00	-3.085E 02	-6.471E 02	-4.882E 02	-1.590E 02	1.172E 03	7.760E 01	1.215E-02	5.883E 01	9.210E-03
4.041E 01	1.217E 01	9.266E 00	-3.086E 02	-6.483E 02	-4.888E 02	-1.595E 02	1.173E 03	7.787E 01	1.219E-02	5.930E 01	9.284E-03
4.072E 01	1.349E 01	1.157E 01	-3.140E 02	-6.863E 02	-5.091E 02	-1.772E 02	1.210E 03	8.633E 01	1.352E-02	7.408E 01	1.160E-02
4.121E 01	1.557E 01	3.337E 00	-3.324E 02	-7.479E 02	-5.433E 02	-2.047E 02	1.267E 03	9.966E 01	1.560E-02	2.136E 01	3.344E-03
4.150E 01	1.680E 01	3.390E 00	-3.511E 02	-7.855E 02	-5.649E 02	-2.206E 02	1.301E 03	1.075E 02	1.683E-02	2.170E 01	3.397E-03
4.246E 01	7.600E 00	3.565E 00	-3.857E 02	-9.128E 02	-6.393E 02	-2.734E 02	1.415E 03	4.864E 01	7.615E-03	2.282E 01	3.572E-03
4.270E 01	1.050E 01	3.608E 00	-3.901E 02	-9.434E 02	-6.574E 02	-2.860E 02	1.444E 03	6.721E 01	1.052E-02	2.309E 01	3.615E-03
4.271E 01	1.062E 01	3.610E 00	-3.903E 02	-9.447E 02	-6.581E 02	-2.866E 02	1.445E 03	6.800E 01	1.065E-02	2.310E 01	3.617E-03
4.277E 01	1.142E 01	3.622E 00	-3.920E 02	-9.528E 02	-6.629E 02	-2.899E 02	1.453E 03	7.311E 01	1.145E-02	2.318E 01	3.629E-03
4.431E 01	3.035E 01	2.444E 01	-4.069E 02	-1.109E 03	-7.592E 02	-3.497E 02	1.638E 03	1.942E 02	3.041E-02	1.564E 02	2.449E-02
4.480E 01	3.637E 01	3.107E 01	-4.101E 02	-1.146E 03	-7.829E 02	-3.632E 02	1.698E 03	2.328E 02	3.645E-02	1.989E 02	3.113E-02
4.549E 01	3.490E 01	4.042E 01	-4.044E 02	-1.196E 03	-8.139E 02	-3.821E 02	1.782E 03	2.234E 02	3.497E-02	2.587E 02	4.050E-02
4.620E 01	3.340E 01	3.845E 01	-3.656E 02	-1.274E 03	-8.453E 02	-4.286E 02	1.868E 03	2.138E 02	3.347E-02	2.461E 02	3.853E-02
4.621E 01	3.338E 01	3.842E 01	-3.642E 02	-1.275E 03	-8.457E 02	-4.297E 02	1.869E 03	2.136E 02	3.345E-02	2.459E 02	3.850E-02
4.625E 01	3.328E 01	3.830E 01	-3.613E 02	-1.282E 03	-8.477E 02	-4.345E 02	1.875E 03	2.130E 02	3.335E-02	2.451E 02	3.838E-02
4.626E 01	3.326E 01	3.827E 01	-3.606E 02	-1.284E 03	-8.481E 02	-4.356E 02	1.876E 03	2.129E 02	3.333E-02	2.449E 02	3.835E-02
4.731E 01	3.102E 01	3.534E 01	-2.733E 02	-1.489E 03	-8.946E 02	-5.941E 02	2.006E 03	1.986E 02	3.109E-02	2.262E 02	3.541E-02
4.811E 01	3.640E 01	3.311E 01	-1.910E 02	-1.676E 03	-9.299E 02	-7.465E 02	2.105E 03	2.330E 02	3.647E-02	2.119E 02	3.317E-02
4.873E 01	3.137E 01	3.137E 01	-9.984E 01	-1.822E 03	-9.572E 02	-8.653E 02	2.182E 03	2.008E 02	3.144E-02	2.008E 02	3.144E-02
5.018E 01	1.863E 01	1.863E 01	9.706E 01	-2.086E 03	-1.020E 03	-1.065E 03	2.363E 03	1.192E 02	1.866E-02	1.192E 02	1.866E-02
5.071E 01	1.397E 01	1.397E 01	1.321E 02	-2.143E 03	-1.043E 03	-1.099E 03	2.430E 03	8.939E 01	1.399E-02	8.939E 01	1.399E-02
5.212E 01	1.162E 01	1.162E 01	2.267E 02	-2.270E 03	-1.104E 03	-1.165E 03	2.607E 03	7.440E 01	1.165E-02	7.440E 01	1.165E-02
5.422E 01	8.025E 00	8.025E 00	3.349E 02	-2.445E 03	-1.194E 03	-1.251E 03	2.874E 03	5.136E 01	8.041E-03	5.136E 01	8.041E-03
5.472E 01	8.658E 00	8.658E 00	3.565E 02	-2.482E 03	-1.215E 03	-1.267E 03	2.937E 03	5.541E 01	8.676E-03	5.541E 01	8.676E-03
5.547E 01	6.941E 00	6.941E 00	3.867E 02	-2.536E 03	-1.247E 03	-1.289E 03	3.033E 03	4.442E 01	6.955E-03	4.442E 01	6.955E-03
5.576E 01	6.279E 00	6.279E 00	3.965E 02	-2.557E 03	-1.259E 03	-1.298E 03	3.070E 03	4.018E 01	6.291E-03	4.018E 01	6.291E-03
5.623E 01	3.331E 00	5.200E 00	4.632E 02	-2.588E 03	-1.276E 03	-1.312E 03	3.102E 03	2.132E 01	3.338E-03	3.328E 01	5.210E-03
5.766E 01	5.452E 00	5.452E 00	5.011E 02	-2.671E 03	-1.317E 03	-1.353E 03	3.210E 03	3.489E 01	5.463E-03	3.489E 01	5.463E-03
5.785E 01	5.486E 00	5.486E 00	5.062E 02	-2.682E 03	-1.323E 03	-1.359E 03	3.234E 03	3.511E 01	5.497E-03	3.511E 01	5.497E-03
5.793E 01	5.500E 00	5.500E 00	5.084E 02	-2.686E 03	-1.325E 03	-1.361E 03	3.245E 03	3.520E 01	5.512E-03	3.520E 01	5.512E-03
5.821E 01	5.550E 00	5.550E 00	5.156E 02	-2.701E 03	-1.333E 03	-1.368E 03	3.280E 03	3.552E 01	5.561E-03	3.552E 01	5.561E-03
5.844E 01	4.700E 00	4.700E 00	5.206E 02	-2.713E 03	-1.339E 03	-1.373E 03	3.309E 03	3.008E 01	4.709E-03	3.008E 01	4.709E-03
5.916E 01	1.975E 00	1.975E 00	5.296E 02	-2.747E 03	-1.359E 03	-1.388E 03	3.402E 03	1.264E 01	1.979E-03	1.264E 01	1.979E-03
6.018E 01	7.700E 00	7.700E 00	5.408E 02	-2.796E 03	-1.387E 03	-1.409E 03	3.532E 03	4.928E 01	7.715E-03	4.928E 01	7.715E-03
6.219E 01	5.387E 00	5.387E 00	5.424E 02	-2.899E 03	-1.439E 03	-1.460E 03	3.790E 03	3.448E 01	5.398E-03	3.448E 01	5.398E-03
6.361E 01	5.469E 00	5.469E 00	5.424E 02	-2.971E 03	-1.474E 03	-1.496E 03	3.972E 03	3.500E 01	5.480E-03	3.500E 01	5.480E-03
6.607E 01	8.918E 00	8.918E 00	5.424E 02	-3.105E 03	-1.535E 03	-1.570E 03	4.289E 03	5.707E 01	8.936E-03	5.707E 01	8.936E-03

READING = 0092 BLOCK = 216 TIME = 312.807 MACH 7.3 PI = 997.999 TT = 5006.2

XABS	P-IB	P-OB	PDA	GVA	W-IP	G-OB	CA-ALL	P-IB/PSO	P-IB/PTO	P-OB/PSO	P-OB/PTO
6.645E 01	9.444E 00	9.444E 00	5.424E 02	-3.127E 03	-1.544E 03	-1.562E 03	4.557E 03	6.044E 01	9.463E-03	6.044E 01	9.463E-03
6.669E 01	5.289E 00	9.780E 00	5.424E 02	-3.140E 03	-1.550E 03	-1.590E 03	4.568E 03	5.365E 01	5.300E-03	6.259E 01	9.800E-03
6.835E 01	5.600E 00	4.365E 00	6.141E 02	-3.226E 03	-1.589E 03	-1.637E 03	4.584E 03	3.584E 01	5.611E-03	6.794E 01	4.374E-03
6.902E 01	4.276E 00	3.907E 00	7.060E 02	-3.259E 03	-1.605E 03	-1.654E 03	4.665E 03	2.737E 01	4.265E-03	2.501E 01	3.915E-03
6.979E 01	2.755E 00	3.325E 00	8.052E 02	-3.301E 03	-1.622E 03	-1.676E 03	4.760E 03	1.763E 01	2.761E-03	2.128E 01	3.332E-03
7.051E 01	2.024E 00	2.780E 00	8.752E 02	-3.344E 03	-1.637E 03	-1.707E 03	4.848E 03	1.295E 01	2.028E-03	1.779E 01	2.786E-03
7.112E 01	1.405E 00	2.472E 00	9.215E 02	-3.376E 03	-1.648E 03	-1.728E 03	4.922E 03	6.992E 00	1.406E-03	1.582E 01	2.477E-03
7.250E 01	1.300E 00	1.777E 00	9.997E 02	-3.416E 03	-1.670E 03	-1.747E 03	5.088E 03	8.320E 00	1.303E-03	1.137E 01	1.760E-03
7.403E 01	1.145E 00	1.005E 00	1.062E 03	-3.450E 03	-1.690E 03	-1.760E 03	5.273E 03	7.330E 00	1.148E-03	6.432E 00	1.007E-03
7.493E 01	1.054E 00	5.491E-01	1.098E 03	-3.478E 03	-1.701E 03	-1.777E 03	5.370E 03	6.746E 00	1.056E-03	3.515E 00	5.502E-04
7.626E 01	9.200E-01	0.000	1.119E 03	-3.522E 03	-1.717E 03	-1.806E 03	5.422E 03	5.888E 00	9.218E-04	0.000	0.000
7.911E 01	1.405E 00	0.000	1.166E 03	-3.553E 03	-1.748E 03	-1.806E 03	5.520E 03	8.992E 00	1.408E-03	0.000	0.000
8.301E 01	1.345E 00	0.000	1.224E 03	-3.592E 03	-1.787E 03	-1.806E 03	5.625E 03	8.608E 00	1.348E-03	0.000	0.000
8.582E 01	1.275E 00	0.000	1.253E 03	-3.631E 03	-1.825E 03	-1.806E 03	5.679E 03	8.160E 00	1.278E-03	0.000	0.000
8.868E 01	1.355E 00	0.000	1.285E 03	-3.696E 03	-1.890E 03	-1.806E 03	5.702E 03	8.672E 00	1.358E-03	0.000	0.000
8.869E 01	1.355E 00	0.000	1.285E 03	-3.696E 03	-1.890E 03	-1.806E 03	5.702E 03	8.673E 00	1.358E-03	0.000	0.000

X	DDRAG	CDRAG	CF	HC
4.040E 01	8.456E 01	8.456E 01	2.090E-03	3.250E-02
4.041E 01	1.617E-01	8.472E 01	2.625E-03	3.398E-02
4.072E 01	5.165E 00	8.989E 01	2.298E-03	4.102E-02
4.121E 01	7.704E 00	9.759E 01	2.364E-03	3.278E-02
4.150E 01	4.531E 00	1.021E 02	2.308E-03	3.479E-02
4.246E 01	1.473E 01	1.169E 02	2.393E-03	2.186E-02
4.270E 01	3.904E 00	1.208E 02	2.840E-03	2.459E-02
4.271E 01	1.655E-01	1.209E 02	2.522E-03	2.651E-02
4.277E 01	1.009E 00	1.219E 02	2.470E-03	2.790E-02
4.431E 01	2.138E 01	1.433E 02	2.735E-03	6.235E-02
4.480E 01	6.198E 00	1.495E 02	3.233E-03	5.795E-02
4.549E 01	8.798E 00	1.583E 02	3.354E-03	5.708E-02
4.620E 01	9.022E 00	1.673E 02	3.462E-03	5.504E-02
4.621E 01	1.288E-01	1.675E 02	3.320E-03	5.845E-02
4.625E 01	5.612E-01	1.680E 02	3.528E-03	5.591E-02
4.626E 01	1.284E-01	1.681E 02	3.252E-03	6.192E-02
4.731E 01	1.238E 01	1.805E 02	3.150E-03	6.013E-02
4.811E 01	8.786E 00	1.893E 02	3.227E-03	5.785E-02
4.873E 01	6.468E 00	1.958E 02	3.276E-03	5.207E-02
5.018E 01	1.505E 01	2.108E 02	3.176E-03	4.004E-02
5.071E 01	5.596E 00	2.164E 02	3.195E-03	3.294E-02
5.212E 01	1.383E 01	2.303E 02	2.995E-03	2.964E-02
5.422E 01	1.773E 01	2.480E 02	2.979E-03	2.207E-02
5.472E 01	3.825E 00	2.518E 02	2.933E-03	2.326E-02
5.547E 01	5.560E 00	2.574E 02	3.006E-03	1.931E-02
5.576E 01	2.105E 00	2.595E 02	2.884E-03	1.847E-02
5.623E 01	1.567E 00	2.610E 02	2.718E-03	1.364E-02
5.766E 01	4.379E 00	2.654E 02	2.682E-03	1.611E-02
5.785E 01	9.932E-01	2.664E 02	2.999E-03	1.406E-02
5.793E 01	4.593E-01	2.669E 02	3.363E-03	1.305E-02
5.821E 01	1.698E 00	2.686E 02	3.352E-03	1.372E-02
5.844E 01	1.387E 00	2.700E 02	3.351E-03	1.225E-02
5.916E 01	4.806E 00	2.748E 02	3.512E-03	6.415E-03
6.018E 01	6.361E 00	2.811E 02	3.338E-03	1.669E-02
6.219E 01	1.163E 01	2.927E 02	3.302E-03	1.341E-02
6.361E 01	8.777E 00	3.015E 02	3.293E-03	1.358E-02
6.607E 01	1.414E 01	3.157E 02	3.359E-03	1.799E-02
6.645E 01	1.859E 00	3.175E 02	3.419E-03	1.801E-02
6.669E 01	1.179E 00	3.187E 02	3.438E-03	1.622E-02
6.835E 01	8.137E 00	3.268E 02	3.360E-03	1.256E-02
6.902E 01	2.769E 00	3.296E 02	3.324E-03	1.102E-02
6.979E 01	2.879E 00	3.325E 02	3.273E-03	8.977E-03
7.051E 01	2.343E 00	3.348E 02	3.234E-03	7.588E-03
7.112E 01	1.752E 00	3.366E 02	3.205E-03	6.499E-03
7.250E 01	3.481E 00	3.401E 02	3.171E-03	5.473E-03
7.403E 01	3.247E 00	3.433E 02	3.109E-03	4.167E-03
7.493E 01	1.397E 00	3.447E 02	3.064E-03	3.323E-03
7.626E 01	7.077E-01	3.454E 02	3.074E-03	3.684E-03
7.911E 01	1.595E 00	3.470E 02	3.115E-03	5.047E-03
8.301E 01	1.889E 00	3.489E 02	3.087E-03	4.850E-03
8.582E 01	9.486E-01	3.498E 02	3.066E-03	4.637E-03
8.868E 01	3.934E-01	3.502E 02	3.061E-03	4.831E-03
8.869E 01	0.000	3.502E 02	3.061E-03	4.831E-03

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RAMJET PERFORMANCE

ENGINE PERFORMANCE

CALCULATED THRUST	921.	(LBF)
MEASURED THRUST	1089.	(LBF)
CALCULATED SPECIFIC IMPULSE	2738.	(LBF-SEC/LBM)
MEASURED SPECIFIC IMPULSE	3239.	(LBF-SEC/LBM)
CALCULATED THRUST COEFFICIENT	0.6241	
MEASURED THRUST COEFFICIENT	0.7382	

REGENERATIVE-COOLED ENGINE PERFORMANCE
CALCULATED

STREAM THRUST	3979.	(LBF)
NET THRUST	1013.	(LBF)
SPECIFIC IMPULSE	3012.	(LBF-SEC/LBM)
THRUST COEFFICIENT	0.6865	

MOMENTUM AND FORCES

INLET FRICTION DRAG	84.6	(LBF)
INLET MOMENTUM CHANGE	-393.0	(LBF)
COMBUSTOR FRICTION DRAG	233.0	(LBF)
COMBUSTOR STRUT DRAG	-2.73	(LBF)
COMBUSTOR MOMENTUM CHANGE	604.	(LBF)
NOZZLE FRICTION DRAG	32.72	(LBF)
NOZZLE STRUT DRAG	-0.00	(LBF)
NOZZLE MOMENTUM CHANGE	710.	(LBF)
NOZZLE PRESSURE INTEGRAL	743.	(LBF)
EXTERNAL FRICTION DRAG	0.00	(LBF)
EXTERNAL PRESSURE INTEGRAL	0.	(LBF)
TOTAL EXTERNAL DRAG	-738.	(LBF)
TOTAL STRUT DRAG	-2.73	(LBF)
CAVITY FORCE	-2042.	(LBF)
CALCULATED LOAD CELL FORCE	-1659.	(LBF)
MEASURED LOAD CELL FORCE	-1691.	(LBF)

FUEL VACUUM SPECIFIC IMPULSE 0.0, 0.0, 0.0, -156.4,

STATIONS

NOMINAL COWL LEADING EDGE	34.884	(IN)
SPIKE TRANSLATION	1.7110	(IN)
INLET THROAT	40.400	(IN)
COWL LEADING EDGE	36.595	(IN)
NOZZLE SHROUD TRAILING EDGE	74.935	(IN)
NOZZLE PLUG TRAILING EDGE	68.687	(IN)
STRUT LEADING EDGE	57.851	(IN)
STRUT TRAILING EDGE	66.451	(IN)
COMBUSTOR EXIT	66.451	(IN)

INLET

ANGLE OF ATTACK	0.000	(DEGREES)
MASS FLOW RATIO	0.9917	
ADDITIVE DRAG COEFFICIENT	0.0000	
LIMITING PRESSURE RECOVERY EFFICIENCY	0.1034	
DELTA PT2	0.0863	(PSI)
TOTAL PRESSURE RECOVERY - SUPERSONIC	0.3938	
TOTAL PRESSURE RECOVERY - SUBSONIC	0.1047	
INLET PROCESS EFFICIENCY - SUPERSONIC	0.9218	
INLET PROCESS EFFICIENCY - SUBSONIC	0.9168	
KINETIC ENERGY EFFICIENCY - SUPERSONIC	0.9214	
KINETIC ENERGY EFFICIENCY - SUBSONIC	0.8677	
ENTHALPY AT PO - SUPERSONIC	-44.28	(BTU/LBM)
ENTHALPY AT PO - SUBSONIC	-4.67	(BTU/LBM)

COMBUSTOR

FUEL-AIR RATIO	0.0216
EQUIVALENCE RATIO	0.852
COMBUSTOR EFFICIENCY	1.000
TOTAL PRESSURE RATIO	0.0761
COMBUSTOR EFFECTIVENESS	0.8567

INJECTOR DISCHARGE COEFFICIENTS 0.9499, 0.4944, 0.7528, 0.6730

NOZZLE

VACUUM STREAM THRUST COEFFICIENT - CS	0.9964
NOZZLE COEFFICIENT - CT	0.9206
PROCESS EFFICIENCY	1.0409
KINETIC ENERGY EFFICIENCY	0.9922

FUEL INJECTORS

INJECTORS	STATION	VALVE
1A	40.400	A
1B	42.696	B
1C	44.300	
2A	50.171	
2C	46.250	E
3A	55.461	
3B	57.646	
4	46.196	C

ORIGINAL PAGE IS
OF POOR QUALITY